GENERAL VIEW

OF THE

AGRICULTURE

OF THE COUNTY OF

WARWICK.

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GENERAL VIEW

OF THE

AGRICULTURE

OF THE COUNTY OF

WARWICK,

WITH

OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

BY

MR. JOHN WEDGE.

DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE
AND INTERNAL IMPROVEMENT.

K Academies &c

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Jos: Banks

ADVERTISEMENT.

THE following valuable communication, reſpecting the preſent ſtate of Huſbandry in the County of Warwick, and the means of its improvement, drawn up for the conſideration of the Board of Agriculture, is now printed, merely for the purpoſe of its being circulated there, in order that every perſon, intereſted in the welfare of that county, may have it in his power to examine it fully before it is publiſhed. It is therefore requeſted, that any remark, or additional obſervation, which may occur to the reader, on the peruſal of the following ſheets, may be *written on the margin*, and tranſmitted to the Board of Agriculture, at its office in London, by whom the ſame ſhall be properly attended to; and, when the returns are completed, an account will be drawn up of the ſtate of Agriculture in Warwickſhire, from the information thus accumulated, which, it is believed, will be found greatly ſuperior, to any thing of the kind, ever yet made public.

The Board has adopted the ſame plan, in regard to all the other counties in the united kingdom; and, it is hardly neceſſary to add, will be happy to give every aſſiſtance in its power, to any perſon who may be deſirous of improving his breed of cattle, ſheep, &c. or of trying any uſeful experiment in huſbandry.

TO

TO
THE READER.

IT is requeſted, that this Paper, may be returned to the Board of Agriculture, before the firſt of May next.

It is hardly neceſſary to add, that the Board does not conſider itſelf reſponſible, for any fact or obſervation contained in theſe Reports, which, at preſent, are printed and circulated, for the purpoſe merely, of procuring additional information, and of enabling every one, to contribute his mite, to the Improvement of the Country.

BRITISH MUSEUM

Jan. 1794.

INTRODUCTION.

THE county of WARWICK is divided into four hundreds, called Hemlingford, Knightlow, Kington, and Barlechway. The county of the city of Coventry, which lies within the county of Warwick, may be conſidered as a fifth hundred. There are about 160 pariſhes in it. The population has not been aſcertained, but muſt be very conſiderable. In regard to its extent, by the beſt information I could procure, it contains about 618000 acres. Its ſituation, near the center of England; the mildneſs (comparatively ſpeaking) and ſalubrity of its air are ſo well known, that it will be unneceſſary for me to ſay more on that ſubject. Its principal rivers are, the Avon and the Tame. The Avon riſes a few miles eaſt of Rugby, and runs in a ſouth weſt direction through Warwick, to Stratford on Avon; and leaves the county, after having croſſed the Ikenild ſtreet, at Bitford; and in its courſe receives the Sow, the Leam, the Stour, and a great number of other ſmall ſtreams, which make it imperfectly navigable to ſome diſtance above Stratford on Avon. The Tame riſes N. W. of Birmingham, and running through the N. W. corner of the county, receives the Rea, the Cole, the Blythe, and other ſtreams of leſs note, and leaves the county at Tamworth.

The woods near Lord Aylesford's, and at Corley, have been ſuppoſed to be higher than any other land in England. From this elevated ridge, the water runs on one ſide into the Avon, and ſo on to the Briſtol Channel, from the other ſide into the Tame, which empties itſelf into the Trent and Humber, at Hull. As Packington and Corley are near the

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center of England, the ſuppoſition ſeems to be well founded; but, however that may be, the ſituation is not colder, nor the air more ſharp, than in other parts of the county; owing, perhaps, to the vaſt quantity of timber and woods, with which this high ground abounds, and is ſheltered. There are not any fens in this county; and much of the wet and ſwampy lands are drained; though on almoſt every farm there is ſome land in want of that moſt eſſential improvement.

The principal market towns are, Warwick (the county town), Birmingham, Coventry, Stratford on Avon, Alceſter, Henley in Arden, Kington, Southam, Rugby, Nuneaton, Atherſton, Poleſworth, and Coleſhill. There are a few others of little note, and many populous villages.

The ſoil of this county varies much; and abounds in almoſt every kind, except thoſe which have chalk or flint as their baſis: but, although the ſoil, extending from Atherſton on Stour, to *Stratford on Avon*, Alveſton, Wellsbourne, Charlcot, Snitterfield, Barford, *Warwick*, Radford, Cubbington, Kenelworth, Stonely, Baggington, Ryeton, Wolſton, Binley, *Coventry*, Alleſley, Meriden, Packington, *Coleſhill*, Caſtle Bromwich, Birmingham, and to many other adjoining villages, amounting to about one fourth of the county, is chiefly a fine dry red loam, or good ſand; yet in many of thoſe pariſhes, ſtrong clay, or barren ſand, are more or leſs intermixed.

The ſouth eaſt part of the county, which is bounded by Oxfordſhire, Northamptonſhire, and the Wattling-ſtreet, extending to the Roman Foſſe-way, (which paſſes through this county) is alſo about one fourth part of the whole. It conſiſts of good ſtrong clay-land, and other rich paſtures of a mixed nature; where great numbers of fine ſheep and cattle are fattened, for the conſumption of the country; but chiefly for the London market. In this tract, alſo, is ſome ſand and gravel, and almoſt every ſpecies of lime-ſtone, or other cold clay-land to be found. A leſs proportion of land is in tillage in this diviſion than in any other.

The north-eaſt end of the county, which is in part bounded by the Wattling-ſtreet-way, extending from High Croſs to Withy-brook, Bulkington, *Bedworth*, Burton Haſtings, *Nuneaton*, Weddington, Anſley, *Atherſton*, Baddeſley, *Poleſworth*, Newton Regis, Seckington, Amington, Wilncot, Baxterley, Whitacre, Aſtley, &c. contains about one other fourth part, and is good ſtrong clay and marl land, with ſuch exceptions as have been mentioned before. This tract has a conſiderable quantity of land uſed for grazing cattle and ſheep, but has much more ploughed, than the ſouth eaſt quarter.

The remaining one-fourth, or weſtern ſide of the county, extending from Sheldon, near Birmingham, to Elmdon, Solihull, Barſton, Balſal, Packwood, Lapworth, *Henley in Arden*, Morton, Bagot, Aſton Cantilow, Alceſter, Bitford, &c. &c. is principally marl, clay, and other cold land, with ſuch exceptions as have been before noticed. This land is moſtly in tillage, and a much ſmaller proportion of ſheep are kept, than on the other parts of the county, partly from the nature of its ſoil, and partly from the neglect of its occupiers, in not draining.

MINERALS.

THERE are conſiderable coal mines worked about Bedworth, Griff, Chilvers Coton, Oldbury, and extending in the ſame line, near to Atherſton, Poleſworth, and Wilncot. They are of a ſulphureous quality, but make durable hot fires, and are ſold from three pence to five pence per hundred weight, at the pits. Some lime is alſo found in that neighbourhood, and worked.

STATE OF PROPERTY.

THE land in this diſtrict is poſſeſſed by many of thoſe who occupy their own eſtates: by the conſiderable tradeſmen and manufacturers of Birmingham, Coventry, and other towns: but principally by thoſe of large eſtates, namely, the Dukes of Buccleugh and Dorſet; the Marquiſes of Buckingham and Hartford; the Earls of Aylesford, Clarendon, Spencer, Warwick, Denbigh, Northampton, Abergaveny, Hertford, Plymouth, and Coventry; the Lords Craven, Middleton, Willoughby de Brook, Bagot, Digby, Dormer, Wentworth, Lifford, and Clifford; the Lord Biſhop Cornwallis, Sir John Mordaunt, Sir G. A. Shaukburgh, Sir Robert Newdigate, Sir Robert Lawley, Sir H. G. Calthrope, Sir H. Bridgman, Sir Thomas Gooch, Sir Thomas Biddulph, Sir R. Throckmorton, and many other reſpectable gentlemen.

MODE OF OCCUPATION.

THE land in this county, from an average of the large and ſmall occupiers, may, I think, be conſidered as being in middle ſized, or rather ſmall farms, about 150 acres each, perhaps leſs: and the average ſize of the new incloſures about 15 acres, and thoſe of the old incloſures about 10 acres; yet there are many opulent farmers and graziers in this diſtrict, who occupy large tracts of land, who, for the management of it, and judicious care in breeding cattle, ſheep, &c. are equal to any others in the kingdom, and who are able to judge of the practicability of thoſe ſchemes or improvements made on a ſmall ſcale, in gardens, on rich lands highly manured, or under other circumſtances, which, however laudable in thoſe who make them, are ſometimes deluſive, and not found to anſwer on a larger ſcale of practice.*

DIVISION OF THE DISTRICT.

I HAVE eſtimated the whole county at 618,000 acres; of which, about one-fourth, 154,530 acres are conſtantly under a ſucceſſive round of tillage, and ſuch graſs ſeeds as will be hereafter mentioned. In every courſe of tillage, conſiſting of two, three, or four crops, a ſummer fallow for turnips or wheat, well manured, is generally made. Of this 154,530 acres, about one-ſixth, 25,700 acres may be every year wheat; about 30,000 acres every year fallow; of

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* The following are the names of ſome of the principal improvers in this reſpectable agricultural diſtrict: Meſſrs. Couchman, ſenior and junior, of Balſal Temple; Mr. Blakeſley, of Exhall; Mr. Palfrey, of Tinnam; Mr. Brooks, of Wolverſhill; Mr. R. Swain, of Foleſhill; Mr. J. Hutchins, of Griff; Mr. Lant, of Alleſley; Mr. Catterns, of Binley; Mr. Smart, of Stivichall; Mr. Moor, of Charlcot; Mr. Eagle, of Alleſley; Mr. Watts, of Binley; Mr. Preeſt, of Fillongley; Mr. Butler and Mr. Wigan, of Kenelworth; Mr. Brooks, of Coventry; Mr. Shelden, Mr. Whitehead, and Mr. Handley, of Barford; Meſſrs. Campions, of Lemington; Meſſrs. Chandlers, of Kington; Mr. Joſeph Ruſſel, of Cubbington; Mr. Boulton, of Welſbone; Mr. Louch, of Melcot; Mr. Smith, of Snitterfield; Mr. Jackſon, of Alveſton; Mr. Boot, of Atherſton on Stour; Mr. Parſons, of Brownſover; Meſſrs. Arnold, Mr. Brierley, near Rugby; Mr. Hern, of Wolſton; Mr. Bagſhaw, Mr. Tomkins, of Snowford; Mr. Bellamy, of Hazely; Mr. Thornley, of Bickenhill; Meſſrs. Richards, of Sheldon; Mr. Perks, of Hams; Mr. Harriſon, of Drakenedge; Mr. Palmer, of Maxſtock; Mr. Whately, of Chadſhurſt; Mr. Higgins, of Bridgetown; Mr. Pen, of Red Hill; Mr. Deſter, of Edſton; and Mr. Parker, of Whitley, near Coventry.

which 30,000 acres, about 15,000 acres may be turnips and vetches; about 41,500 acres every year, barley, oats, beans, &c. and the remaining 57,330 acres of ſeeds, the greater part of which are grazed with cattle and ſheep; perhaps 45,000 acres grazed, and the remainder mown. The remaining 463,470 acres I ſuppoſe to conſiſt of gardens, meadows, paſture, woods, water, open fields, waſte lands, and roads. Of gardens, (to about 24,000 houſes) about 4000 acres; of meadows 82,000 acres; of paſture and feeding lands 150,000 acres; of woods, canals, and rivers, &c. 50,000 acres; of open field land 57,000 acres; and of waſte lands and roads 120,470 acres. If I had been able to aſcertain with more certainty theſe proportions, I ſhould here have attempted to calculate the rental and produce of the whole county, by entering minutely into the particulars of each article; but at preſent, I ſhall only ſuppoſe the average price of land, excluſive of waſte, to be 18s. per acre, which amounts to the yearly rent of 448,200l. excluſive of houſes; and that the produce is three times that ſum, or 1,344,600l. The farm houſes and offices in this diſtrict are, upon the whole, tolerably good; many of them excellent, and moſt of them in a train of progreſſive improvement.*

HUSBANDRY.

THE ſyſtem of huſbandry, in Warwickſhire, varies much on the ſame ſorts of land. Many of the beſt managers avoid taking two white ſtraw crops in ſucceſſion, but there are greater numbers of occupiers who do not attend ſufficiently to that circumſtance, who are, in other reſpects, good managers.

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* I beg leave here to expreſs my thanks to Mr. Couchman, and to his ſon, for their aid in aſcertaining theſe proportions; and to them and ſeveral others, for material aſſiſtance in the whole of the buſineſs ſtated in theſe papers.

ROTATION OF CROPS.

On loam, or good ſandy ſoils, by the beſt managers.

Wheat from turf; if clean vetches for green food previous to a turnip fallow;
Barley;
Seeds; grazed 1, 2, or 3 years, manured; and then
Peaſe, beans, or vetches from turf;
Wheat;
Turnip fallow manured;
Barley;
Seeds, grazed 1, 2, or 3 years; and then
Oats, or barley from turf;
Peaſe, and, if clean, bruſh turnips, or *vetches*, previous to a turnip fallow, manured;
Barley;
Seeds, 1, 2, or 3 years, according to the number of fields occupied in this manner, and ſo on as before, varying the crops in every courſe of tillage. In this county, turnips from a fallow are not (in reſtraining leaſes) conſidered as a crop.

Rotation of crops, on the ſame kind of land, by other managers.

Fallow for turnips, from turf, manured;
Barley;
Peaſe;
Wheat;
Seeds, 1, 2, or 3 years.
Oats, or barley, from turf;
Turnip fallow, manured;
Barley;
Oats;
Seeds 1, 2, or 3 years.
Oats, or barley from turf;
Wheat manured;
Turnip fallow;
Barley;
Seeds, 1, 2, or 3 years.
Peaſe from turf; then
Turnips, potatoes, or carrots, manured;
Barley;
Seeds.

Flax from turf;
Wheat;
Turnip fallow, manured;
Barley;
Seeds.

The average produce of this kind of land, is, about 24 buſhels of wheat; 40 buſhels of barley; 45 buſhels of oats; 30 buſhels of peaſe; 20 tons of turnips; 1½ ton of clover (or ſeeds, &c.); and 35 ſtones of flax on an acre.

On good ſtrong land.

Beans, or peaſe, from turf;
Wheat;
Turnip fallow, manured;
Barley;
Seeds, 1, 2, or 3 years.
Wheat from turf, ſometimes trench ploughed;
Beans, peaſe, or both;
Barley or oats;
Seeds, 1, 2, or 3 years, manured.
Beans from turf;
Cabbages previous to wheat, manured;

Barley or oats;
Seeds.

Summer fallow from turf;
Wheat, and then cabbages manured;
Barley;
Seeds.

Vetches from turf for green food;
Wheat;
Barley;
Seeds, manured.

Summer fallow from turf, manured;
Wheat;
Beans;
Barley or oats;
Seeds.

Summer fallow from turf;
Wheat;
Barley, or oats;
Turnip fallow, manured;
Barley;
Seeds.
Summer fallow from turf, manured;
Wheat;
Barley;
Oats;
Seeds.

Flax fom turf;
Wheat;
Summer fallow manured:
Wheat, barley or oats;
Seeds.

The average produce of this land is about 35 buſhels of beans; 28 buſhels of wheat; 30 buſhels of barley; 40 buſhels of oats; 40 ſtones of flax; and 2 tons of clover, on an acre.

On poor ſands.

Turnip fallow from turf, manured;
Barley;
Seeds. 1, 2, or 3 years.
Oats, from turf;
Turnip fallow;
Barley;
Seeds, manured.

Summer fallow, from turf;
Rye;
Seeds, manured.

Turnip fallow from turf, manured;
Barley;
Oats;
Seeds.

On poor clay and other cold land.

Oats from turf;
Summer fallow, manured;
Wheat;
Seeds, 1, 2, or 3 years.

Wheat from turf, top dreſſed with ſoot, ſoap aſhes, &c.
Summer fallow, manured;
Barley or oats;
Seeds, 1, 2, or 3 years.

Beans from turf;
Wheat, manured;
Summer fallow;
Barley or oats;
Seeds, 1 or 2 years.

Summer fallow from turf, manured;
Wheat;
Oats;
Seeds, &c.

The average produce on poor ſands, poor clay, and on other cold land, is about 24 buſhels of barley; 28 buſhels of oats; 24 buſhels of rye; 16 buſhels of wheat; 18 buſhels of beans; from one, to one and a half ton of clover; and 15 tons of turnips, on an acre.

On open field ſtrong land, the three field rotation.

Summer fallow, manured;
Wheat;
Beans, peaſe, barley or oats, and ſo on.

Summer fallow, manured;
Wheat;
Clover for ſeed; and then
Wheat at one furrow;
Beans, &c.
Summer fallow manured, and ſo on as before.

Four field rotation.

Beans;
Wheat;
Summer fallow, manured;
Barley or oats, &c.

On light land, three field rotation.

Fallow, manured;
Wheat;
Barley or oats.

Four field rotation.

Wheat from clover lay;
Turnip fallow, manured;
Barley, oats, or peaſe;
Seeds, 1 year, &c. &c.

The produce of open fields is about 20 buſhels of wheat, and 24 buſhels of barley, oats, and beans, per acre. The average rent of open fields is about 10s. per acre; the rent of ſame kind of land, when incloſed, about 18s. per acre.

SEED TIME AND HARVEST.

WHEAT is ſown early in September, and ſo on till December; beans, vetches, and peaſe, in February, March, and April; vetches for green food till the latter end of May; and Flax in April. Early ſowing ſeems to gain ground, and generally ſecures an early harveſt, viz. July for peaſe, and the beginning or middle of Auguſt for moſt other crops: but it is no uncommon thing to ſee wheat, oats, and barley, not cut in October and November, and beans in the fields ſo late as December; owing to late ſowing in *bad ſeaſons*, and to other bad management. Yet the great bulk of corn harveſt, in this county, is houſed in Auguſt, and the firſt week of September.

Hay harveſt commences on good meadows, and near to towns, early in June, and continues in particular ſituations, till the middle of Auguſt; but is principally done between Midſummer and the ſecond or third week in July.*

WATER MEADOWS.

THERE are ſome lands watered in the vicinity of Birmingham, and more or leſs near every town, and almoſt every village in the county; the produce of theſe lands, in good ſeaſons, is from one and a half to two tons per acre. On ſome of the numerous rivers and rivulets of this county, there are meadows watered; and, in many inſtances, the water of land floods, &c. is united, and diverted, for the ſame purpoſe, ſo as conſtantly to produce good crops of hay, without any other manure; not only on what is by nature meadow land, but alſo on up land; the latter of which generally derives the greater benefit from it, becauſe an opportunity is afforded of having the water *quickly and effectually diſcharged from its ſurface*; by which greater advantage is obtained from its being moiſtened with pure water only, in hot burning ſummers.—But, although numerous inſtances occur of lands being watered, and ſome of them in an effectual manner, yet inſtances of opportunities neglected, or lands *imperfectly* watered, are infinitely *more* numerous; and it muſt be confeſſed, that this county is (on the whole) very much deficient in the management of water meadows, compared with ſome of the weſtern counties of England. One of the great advantages of water meadows is ſupplying manure for other parts of the farm, inſtead of robbing it, as is the caſe with meadows not under the improvement of water. The fertilizing quality of *clear ſpring water*, which has its ſource in flints or chalk, on ſome of the weſt country meadows, is ſaid to exceed the water of large towns, which is ſaturated with putrid ſubſtances. There is not any chalk or flint (of conſequence) in this diſtrict; yet I have often obſerved this fertilizing quality of *clear ſpring water* in this county, where its ſource has been from calcareous ſubſtances of either marl or ſtone, but in a much leſs degree than in the inſtance before mentioned; the good effects of ſuch waters on meadows muſt, I think, be produced by its holding ſome calcareous ſubſtance in *perfect ſolution*, which, when diſtributed over graſs lands, muſt depoſit that ſubſtance on its ſurface, and, by its ſeptical quality, muſt ſeize all imperfect or detached vegetable ſubſtances, and convert them into mould; which mould, ſubſiding near to the roots of the different graſſes, is the cauſe of their luxuriant growth.

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* There is a conſiderable quantity of flax grown, and manufactured in this county. I have not yet had time to collect ſufficient particulars, relative to its preparation, and the manner and prices of manufacturing it. But, ſhould the Board wiſh any information from me, relative thereto, I will ſend a *ſhort paper* on that ſubject, if I am honoured with their commands.

IMPROVEMENTS SUGGESTED.

IT may not be improper here to mention, that all the different rivers, and ſmaller ſtreams, in this county, have been *very much neglected*, by permitting the accumulation of ſoil, roots, &c. depoſited by floods to remain unremoved; and by a mercenary principle of the land-owners, or tenants, planting on each ſide, poplars, and other aquatic plants. Theſe rivers, &c. are conſequently become ſo narrow, and ſo full of ſhoals, and the meadows are ſo often overflowed in wet ſeaſons, as to be *very much reduced in their value* by ruſhes, coarſe graſs, and the hazard of floods.

Lord Aylesford, obſerving this, is now clearing out the river Blythe, which runs ſeveral miles through his eſtates; and I have authority to ſay, that the ſoil dug out from that river will, as manure, be worth more than the whole expence of widening it, which is about one hundred pounds per mile. If the method purſued by his Lordſhip in this buſineſs, was to take place generally on the other rivers of the county, the improvement would be immenſe; the meadows would become ſound, and ſummer floods, which frequently carry off, or ſpoil the whole crop of hay, would ſeldom, if ever, happen. Mr. Moland, at his much improved place of Springfield, has alſo opened a part of the ſame river.

DRAINING.

DRAINING is, without doubt, the firſt ſtep towards the improvement of all wet land; it has been practiſed, with much ſucceſs, in this county for ſeveral years; but more particularly ſo ſince Mr. Elkington, a farmer in this diſtrict, introduced a method of draining boggy lands (about the year 1780) by making deep drains, and boring at the bottom or ſides of them, through the different under ſtrata, ſo as to tap the ſprings, and thereby, in many inſtances cure large tracts of land, with very few drains. The novelty of this practice here, and Mr. Elkington's myſterious manner, in declaring he knew where, and in what direction the different ſtrata of the earth divided, and at what particular point an auger hole might be bored, to lay dry this or that particular ſpring or well, were matters which attracted much notice, and occaſioned great ſurpriſe; and it is but juſtice to Mr. Elkington, to ſay, that in one claſs of bogs, &c. which abound as much as (perhaps more than) any other, he has not only had the honour of introducing the auger in this county, but the merit of laying effectually dry, many large tracts of land. Some failures, however, having happened, and the theory of draining not appearing to be thoroughly aſcertained, I was induced to write a paper on the ſubject, which will be found in the Appendix, together with the plans explanatory thereof.

Much draining has been done in this county, with what are called ſoughing bricks, that is, two bricks on the flat ſides of which are ſemicircular cavities; theſe bricks, when placed one on the other, in the bottom of the drain, form a circular ſpace of two, three, or more inches diameter, for the water to paſs along; but its ſediment, or ſomething which has the appearance of vegetation, frequently ſeals up the joints ſo cloſe, as to prevent the top, or ſide water, from being admitted into them: and often times the cylinder itſelf is filled up. Pebbles filling up the bottom, and cord wood, are ſometimes uſed; but the current of the drain water is much obſtructed by them; and, in a few years, I have ſeen them filled up by the friction and ſediment of the water paſſing through them; nor will turf, placed on ſhoulders, or in the form of a wedge, with its bottom angle taken off, continue good, in any inſtance which I have ſeen, for more than twelve or fourteen years, oftentimes *much leſs.* Two ſide ſtones, and a coverer, of any kind of rough ſtone, that will ſplit, are, in my opinion, the beſt materials for cloſe drains; where that cannot be had, clay moulded and burnt, in the form of ridge tiles for houſes, (with holes on the top and each ſide) of any required ſize, to be placed on ling or gorſe, &c. in order to keep them from ſinking, where the bottom is bad, will anſwer very well, in many ſituations, and be a cheaper and better bottom for ſoughs than almoſt any other.

MANUFACTURES.

COMMERCE and manufactures have been carried on to a great extent in this diſtrict: the toy and hardware trade, &c. of Birmingham and its vicinity, and the ribbon and tammy trade, &c. of Coventry and its neighbourhood, are well known. The good or bad effects which commerce and manufactures are likely to have on the agriculture of this diſtrict, depends on many circumſtances; but their effects have hitherto, in my opinion, been good, by furniſhing manure, ſuch as ſoot, horn-duſt, malt-duſt, rags, ſoap-aſhes, coal-aſhes, the refuſe of dyers, &c. and all the varieties of putrid manure for the improvement of land, by conſuming its produce, and by giving employment to ſuperfluous hands. As this ſubject is, in ſome degree, connected with the incloſure of common fields, I beg leave to ſay a few words upon that ſubject.

INCLOSURES.

ABOUT forty years ago, the ſouthern and eaſtern parts of this county conſiſted moſtly of open fields, which are now chiefly incloſed, at an expence, on the average, of about 45s. per acre, when frugally managed; which, in many inſtances, was not the caſe; and, from the beſt information which I can obtain, theſe incloſures have produced an improvement of near one-third of the rents, after allowing intereſt for thoſe expences, and, in many inſtances, much more, upon a twenty-one year's leaſe. There are ſtill about 50,000 acres of open-field land, which, in a few years, will probably all be incloſed. Many of the open fields, which have been incloſed, are converted into paſture, particularly in the ſouthern and eaſtern parts of the county, which are let at high rents, (from 15s. to 35s. per acre) and on which a much improved breed of cattle and ſheep are kept and fattened. If the increaſed produce of theſe incloſures, and of thoſe in the neighbouring counties, be taken into conſideration, and alſo the advanced price of butcher's meat, it ſeems to prove, that either population or luxury (or perhaps both) muſt, on the whole, be immenſely increaſed. Theſe lands, being now grazed, want *much fewer hands* to manage them than they did in their former open ſtate. Upon all incloſures of open fields, the farms have generally been made much larger: from theſe cauſes, the hardy yeomanry of country villages have been driven for employment into Birmingham, Coventry, and other manufacturing towns, whoſe flouriſhing trade has ſometimes found them profitable employment.

It may be granted, that the fewer men and horſes any given tract of land requires for its proper management, the greater will be its produce for market; and that the ſupernumerary labourers, which muſt have been fed and employed in the cultivation of ſmall open field, and other ſmall farms, are employed, with much more advantage to the public, in the different manufactories of this county; but if trade in general ſhould, for any great length of time, continue bad, the Board will be much better able to judge of the conſequences than myſelf, and will alſo ſee how much the peace and proſperity of this country depends on its trade, in the train in which things now are; and it ſeems fortunate, at this period,

riod, that the creation of a new kind of property gives employment to ſo many thouſands of the laborious poor; I mean inland canals, by which, on the return of peace, commerce will no doubt be conſiderably increaſed, the cultivation of waſte lands be promoted, and manufacturing towns flouriſh. We may then think ourſelves happy, that Birmingham and Coventry are within this diſtrict; and, on the whole, find advantageous employment for an immenſely increaſed population.

PRICE OF PROVISIONS.

GRAIN of all kinds has been much more regular in its price ſince canals have been in uſe: the London Gazette regularly ſtates its price. Mutton and pork have been, for the laſt three years, about 4½d. per lb. on the average; beef 3½d. lamb from 6d. to 4d. and veal from 6d. to 3d. per lb. Whether the price of proviſions is likely to be ſteady, to riſe or to fall, depends ſo much on ſeaſons, a regulation of the ports, on the cultivation of waſte and crown lands, and on a flouriſhing or a bad trade, that nothing can with certainty be ſaid on that ſubject, but what muſt have reference to thoſe or ſimilar circumſtances; but, on the whole, my opinion is, that, if trade ſhould be good, the price of proviſions will advance.

LABOUR.

THE price of labour is in ſome degree governed by the Birmingham and Coventry trade in the vicinity of thoſe places, and is there, generally ſpeaking, one-fourth more than in the remote villages. In thoſe country ſituations, in harveſt, labourers have 1s. per day, and victuals; and, if extraordinary hands are wanted for the harveſt months, or indeed at any other time of the year, their wages depend on the neceſſity of the work, their ſkill in particular undertakings, and ſometimes on the goodneſs or badneſs of trade. At other times of the year, labourers have from 4s. to 5s. per week, and victuals; and from 6s. to 8s. per week, without them; but ſometimes with, and ſometimes without, an allowance of ſmall beer. The hours of labour are commonly from ſix o'clock in the morning till ſix in the evening, while there is day ſufficient for that purpoſe; and, where there is not, from light till dark. Women have, in hay-harveſt, from 6d. to 8d. per day, with ſmall beer. The time of labour is from eight o'clock till ſeven. In corn-harveſt they have 1s. The price of reaping wheat is from 5s. to 8s. per acre, with an allowance of about two gallons of beer per day to each man, and ſometimes a hot dinner; for cutting barley and oats, from 1s. to 2s. per acre, proportioned to the ſtrength of the crop; for peaſe and beans ſtyched, from 2s. 6d. to 5s. per acre; and for cutting graſs, from 1s. 6d. to 2s. 6d. per acre, with an allowance, as before, of ſmall beer. Thraſhing wheat or rye, 1s. per bag; peaſe and beans, 4d. per bag; barley, 1s. 6d. per quarter; oats, 1s. 2d. per quarter.

PAROCHIAL PAYMENTS.

THE poor's rates, and other parochial payments in this county, vary much, and, on the average, amount, I gueſs, to about 3s. in the pound on the rents. In Birmingham, Coventry, and other manufacturing places, they are from 10s. to about 5s. in the pound, as trade is better or worſe; and, in many of the adjoining pariſhes, they are very greatly oppreſſed with poor's rates, particularly at Foleſhill, near Coventry, where they are, this year, 12s. in the pound. The rapid growth of manufactories in this county, the greatly decreaſed value of money, and a continual increaſe of poor's rates, are inconteſtible facts: but I am inclined to believe, that the latter does not ariſe, in country villages, from any want of induſtry or effort in the labouring poor, but that they receive from pariſh officers only what they ought to receive in *wages*. If it be admitted, that the value of money is leſs now by one half than it was one hundred and fifty years ago, that the wages of agricultural labourers are not, on the whole, advanced, ſince that time, much more than one-fourth, and that their wages at that time were not more than ſufficient to ſupport themſelves and their families, it follows, that ſuch a deficiency (of about one-fourth) muſt have greatly added to the burthen of the poor's rates: that thoſe rates may ſtill continue to advance, from the ſame and other cauſes, the following conſiderations will, I think, render probable; a vaſt number of thoſe who are employed in manufacturing towns, are pariſhioners to different villages, (particularly thoſe in their vicinity); whenever infirmity, old age, or a check in trade, happens, theſe men are not ſupported by thoſe who have had the benefit of their labour, but are ſent for ſubſiſtence to their reſpective pariſhes; which ſeems an hardſhip that I hope the wiſdom of the Board will find ſome means to leſſen or remove.

OX TEAMS.

OX TEAMS are uſed in ſome parts of this county; but in a very ſmall degree, compared with the almoſt general uſe of horſes: and this ariſes from prejudice, which may probably be removed by the Board. In the management of farms, lime, coal, &c. muſt generally be drawn along hard roads, to a conſiderable diſtance, and their produce be conveyed to market by the ſame means, which is certainly beſt done with horſes. I am, therefore, apt to believe, that few farmers can uſe oxen advantageouſly, except thoſe who want the labour of more than ſeven or eight horſes; but all team work, beyond that, would, I am perſuaded, be highly profitable to the farmer, and greatly beneficial to the public, if done with oxen. My reaſons for fixing ſeven or eight horſes as neceſſary to be kept on the larger farms, are theſe: many of the greater works in huſbandry, are done (in harveſt, &c.) with two *going* and one *ſtanding* waggons or carts, (according to our phraſeology) which will employ that number of horſes, as will alſo a nine inch wheeled waggon for lime, coals, &c. &c. Lord Aylesford keeps fifteen working oxen, (three teams), for home work, which are ſupported at *half* the expence of an equal number of horſes. It may poſſibly happen in particular ſituations, which have the advantage of canals, that both the large and ſmall farmers might do their whole buſineſs with oxen; becauſe, in thoſe ſituations, not any team work on hard roads, or to great diſtances, would be wanted.

CANALS.

THE canals that paſs through this county, are, one from the Wedneſbury and Dudley coal and lime works to Birmingham, and from thence to Fazeley and Fradley-Heath, to join the Staffordſhire grand trunk, from Fazeley, to Atherſtone, Bedworth, and Coventry; one extending from that at Longford to Braunſton and Oxford; one from Birmingham to Worceſter; one branching out of the Worceſter, one way to Dudley, &c. and the other way to Stratford on Avon; and one from Birmingham to Warwick.

AGRICULTURE SOCIETIES.

THERE are not any ſocieties inſtituted in this diſtrict for the improvement of agriculture or breeding. Such inſtitutions would, doubtleſs, be of the greateſt ſervice. But, although there are no public inſtitutions in this diſtrict, for the promotion of agriculture and breeding, yet many of theſe occupiers of land have a ſpirit for improvement, that a few honorary excitements, or any other diſtinguiſhing marks of approbation which the Board may think proper to beſtow, may incite them to undertake every experiment in agriculture or breeding, that they may reaſonably expect or recommend.

TURN FOR IMPROVEMENT.

THE lower claſs of occupiers, (and indeed ſome others) can only be induced to adopt alterations or improvements, from obſerving the ſucceſs of thoſe who unite profitable practice with rational theory; and it muſt be confeſſed, that chimerical theory and expenſive practice have ſometimes been very properly rejected by them. Perhaps experimental farms may be inſtituted by the Board, in different parts of the kingdom, for the improvement of agriculture and of breeding, where rams and bulls for the uſe of the lower claſs of farmers, graziers &c. may be kept, which I humbly conceive would be a meaſure of great utility; for it muſt be obſerved, that the high prices of Leiceſterſhire, for thoſe animals, have extended into this county; which puts any improvements in the breed of cattle or ſheep out of their power to obtain.

HORSES.

RESPECTING the breed of horſes there is leſs difficulty. There are many fine cart, coach, and hunting horſes bred in this diſtrict, from excellent ſtallions; which (contrary to the cuſtom relative to bulls and rams) are uſed at very reaſonable rates. The two former ſorts anſwer the breeder's purpoſe, of profit, much better than the latter; and are oftentimes, after being uſed ſome years for agricultural purpoſes, ſold into heavy or light carriages, from twenty to ſixty guineas each.

CARRIAGES.

THE larger occupiers of land, and public carriers, have, many of them, ſix and nine-inch wheeled waggons for the road; but thoſe moſt generally in uſe for harveſt work, and employed by the ſmaller farmers, have narrow wheels. The carts moſt commonly uſed for huſbandry, have wheels of ſix or nine inches broad.

The turnpike roads through this county are tolerably good; ſome of the private roads are well managed, and in good repair: but moſt of them very bad, from a ſcarcity of materials, and from a conſiderable neglect, or injudicious application of the ſtatute duty, occaſioned by the want of ſkilful permanent ſurveyors being appointed. The roads near London, and ſome other principal towns, are covered twenty yards wide, with hard materials, which is certainly proper, where the revenue of ſuch roads will permit; but in this county few of the roads can be made on that principle, on account of the great expence which would, in many inſtances be 1000l. per mile. The moſt that can, I fear, be expected on the private and greateſt parts of the public roads here, is to have them well formed, and ſtoned or gravelled to the width of twelve or eighteen feet, ſo as to obtain a hard middle track. From theſe conſiderations, I am led to ſtate my opinion to the Board, on the effect of ſome carriages now in uſe, on different roads, &c. On pavements and other roads, made with materials that will reſiſt carriages loaded according to the weights allowed by act of parliament, there is no doubt but what the broadeſt wheels are the beſt; but as I have never ſeen materials that would bear ſuch loads, (of ſix, ſeven, and ſome of them eight or nine tons, including the carriage) without being cruſhed, (ſome few pavements of hard pebbles, &c. excepted) it appears to me, that carriages allowed to draw ſuch weights are not proper for this county, or perhaps any other. On theſe roads, and ſome near London, I have followed with attention thoſe waggons, which, from the breadth of their wheels, are allowed to carry the greateſt weight, and have always found almoſt every looſe ſtone, flint, &c. over which the wheels of ſuch carriages paſs, cruſhed, and many of them even ground to powder; and, on ſuch parts of thoſe roads where the materials are firmly united, moſt of the uneven projecting points broken or ſmaſhed, nearly in the ſame manner; for it is evident, that every looſe ſtone, or projecting point of the road which happens to fall within the range of ſuch wheels, muſt receive on that point the greateſt poſſible preſſure, producing the effect before deſcribed. Hence, on the London and other roads, ariſes that perpetual neceſſity of ſcraping or waſhing them in winter, and (in part) thoſe immenſe clouds of duſt in ſummer. If theſe premiſes be true, broad wheeled carriages allowed to carry ſuch weights, inſtead of preſerving, deſtroy the roads; and ſome other kind of carriages ſeem neceſſary for common roads made with common materials.

It muſt be granted, that ſome advantage is obtained from horſes being drawn double in heavy carriages; and yet I cannot reſiſt the temptation of ſubmitting the following facts to the conſideration of the Board, which may lead them to inveſtigate the matter more fully, and to recommend the proper remedy. Waggons with nine-inch wheels, drawn by eight horſes, are thoſe moſt uſed by London and other carriers; which, with their loading, are allowed to weigh ſix tons. The roads in the midland counties have ſeldom more than a middle track in winter, in which all carriages conſtantly paſs. In conſequence of this, ruts or channels are made, ſometimes very deep, which render it difficult, oftentimes unſafe, and at all times unpleaſant for horſemen and light carriages to paſs. Wheels of different widths, and horſes from being drawn double, thus paſſing along the ſame ruts, the materials at their ſides and bottoms are conſtantly diſturbed from their bed, and as conſtantly cruſhed by the heavy broad wheeled carriages which paſs over them. Permit me then to ſuggeſt, that ſix-inch wheels, with the tier perfectly flat, on all carriages for the purpoſes of agriculture and public carriers, drawn by four or five horſes, one after the other, would prove moſt uſeful and leaſt injurious to the roads, if limited to a proper weight, perhaps four tons, winter and ſummer. Many of the private or bye-roads, in this and moſt other counties, are ſo narrow as to admit of only one track; and chiefly with very deep ruts. On ſuch roads, horſes drawn double cannot be uſed; but ſix-inch wheeled carriages, with the horſes drawn ſingle, might be uſed with very great advantage: and, if ſuch carriages were uſed generally on the turnpike roads, where there is a ſound middle track only, the path beaten by the horſes thus drawn, would be very commodious for horſemen, and would form one part of an excellent quarter for light carriages. The ruts formed by carriages, all having the ſame width of wheel, ſix inches, and of ſuch weights as would not much cruſh the materials which are now made uſe of, would be kept in repair at one-fourth of the expence which they are at preſent; and, in all caſes, where a ſmall ſtream of water could be taken into thoſe ruts, having a gentle deſcent only, that expence would be much leſſened. The roads near London, and other places, which are well formed, and gravelled the whole width, would, I believe, receive much leſs injury from carriages of this kind, than from thoſe now in uſe; becauſe the materials which form them would be leſs deſtroyed by their weight: for which reaſon, and from the conſtant meeting of carriages on ſuch roads, no ruts could be there formed.

SHEEP.

THERE are, generally ſpeaking, two ſorts of ſheep bred in this county; a larger or polled ſort for paſtures, which weigh from ſixteen to forty pounds per quarter, ſome more, when fat; and cut from ſix to fifteen pounds of wool each.

The average ſize of this kind of ſheep, when ſheer-hogs and fat, is about twenty-two pounds per quarter, and their fleece weighs eight or nine pounds: the wool of the former is combed for Jerſey, the latter for hoſiers, and uſed by clothiers. Some of theſe paſture ſheep, bred by Mr. Palfrey, near Coventry; by Mr. Grimes, of Baggington; Mr. Harris, of Hill; Mr. Barnet, Mr. Blakeſley, of Exhall; Mr. Swain, of Foleſhill; and ſeveral others, are, in point of ſize, beauty, and profit, equal to any others which I know in the kingdom. A ſmaller ſort, ſome with black and ſome with grey faces, are alſo bred for commons, open fields, and inferior paſtures, which weigh from eight to twenty-five pounds per quarter, when fat, at two, three, or four years old; and cut from one to five or ſix pounds of wool each, which is uſed by clothiers; ſome with and ſome without horns. Some few Wiltſhire ſheep, and others of mixed breed, are alſo bred. Great numbers of ſheep are every year bought from diſtant counties; ewes for making fat lamb, and wethers for feeding. Folding ſheep is here but little practiſed, and ſeems not to be well underſtood; perhaps our long-woolled ſheep are not ſo proper for that purpoſe as thoſe which have ſhorter wool. In the open fields, and about Edge Hills, ſome few ſheep are folded. Lord Aylesford, alſo, uſes a large flock of Wiltſhire ſheep, in that way, to much advantage; and by which the better land on his farm, and in each particular field, conſtantly improves that of inferior quality, inſtead of the reverſe; as is the caſe where ſheep are left to chooſe their own lodging.

LEICESTER BREED.

There has alſo been lately introduced to this county a kind of ſheep called the *new Leicſterſhire*, which are much lighter in their bone, offal, and wool, than the old Leiceſterſhire,

ſhire, or Warwickſhire breeds; they are neat animals, and much reſemble the better kind of Wiltſhire ſheep, in their legs, wool, and faces; but have no horns. Such has been the reputed excellence of theſe ſheep for becoming fat, with a much leſs proportion of food than any other kind, that rams of this new breed are ſaid to have produced a profit of 1000 guineas a year to their owners, and exorbitant prices from that ſum downwards. There is a report of a combination amongſt ſome of the breeders of ſheep of that kind, who are ſaid to have agreed not to take rams to markets or fairs, nor to let one to any perſon who does ſo; not to let more than a limited number of rams, and at not leſs than a certain price; not to ſet a value on their own rams, but to receive offers from thoſe who chooſe to hire them; not to ſhew any number of them together, in order to prevent compariſon; not to ſell any culling ram or ewe of the true breed, except ſlaughtered; and, by ſelect meetings at markets, fairs, &c. and by every other means in their power, to keep the ram buſineſs in their own hands. There is in ſuch a combination, ſomething ſo repugnant to public ſpirit and utility, that it muſt in the end defeat its own ſordid purpoſes.

As oppoſition ſometimes brings on uſeful diſcuſſion, I ſhall, on this ground, remind thoſe breeders, that, about twenty years ſince, they recommended, in the ſtrongeſt poſſible terms, a breed of ſheep almoſt totally covered with wool, and that were, in appearance, dwarfs. Theſe ſheep, they aſſerted, had alſo the gift of becoming fat, with very little food; and, as they are now totally out of uſe, I cannot place ſo much confidence in the aſſertions of thoſe breeders as I otherwiſe ſhould have done; but yet it muſt be admitted, that the new Leiceſterſhire breed are greatly preferable to thoſe which they *formerly recommended*, and for ſome lands a valuable breed of ſheep. As it is the buſineſs of a quack to conceal the compoſition of a noſtrum by which he fills his pockets, ſo alſo has it been the the practice of thoſe ram-breeders, to conceal, the manner in which their *new kind of ſheep* have been bred: on that account I ſhall endeavour to explain what their owners have, with ſo much care, endeavoured to keep from the public. I have called them a *new breed of ſheep*, becauſe that fact they (the breeders) have laboured hard to eſtabliſh: and, taking that for granted, it eſtabliſhes, beyond contradiction, another fact, viz. that this *new breed* of ſheep muſt have been a *croſs* from ſome others.

HOW BRED.

From the ſimilitude which theſe ſheep have in their wool, and in other particular points, to the better ſorts of Wiltſhire, and from their ſimilitude alſo to the better ſorts of old Leiceſterſhire and Warwickſhire ſheep, I have little doubt but that a coſs, or croſſes, from thoſe kinds, has produced the new breed of ſheep in queſtion. In this opinion I am confirmed by my own experiments, and by the judgment of others; and I have here ſent a ſketch of a ſheer-hog bred in that way. It appears to me, that great care is neceſſary in changing the breed of ſheep or cattle from one country to another, where the air, climate, or food, in any material degree, differ; and that change (when neceſſary) may be beſt effected by judicious croſſes with other animals, whoſe ſhape, ſize, or wool, &c. have thoſe points or qualities which the breeder moſt deſires to alter or correct in his own. A deſcription of thoſe croſſes, that would probably produce uſeful animals, of different kinds and ſizes, different ſorts of wool, &c. adapted to the richneſs or poverty, heat or cold, expoſed or ſheltered ſituations, in the different diſtricts of this kingdom, would, I am convinced, be a work of much public utility; for it appears evident, that any material change in thoſe circumſtances muſt require animals adapted to them.

The excellence of this new breed of ſheep (as it is called) ſeems to ariſe from the ſmallneſs of their bones and offal; and I have no doubt but that judicious croſſes from every other kind of ſheep in the kingdom, by attending to thoſe circumſtances, may be bred with as great an aptitude to become fat as the celebrated Leiceſterſhire breed.

DAIRIES AND CATTLE.

THERE are fine dairies of cows in almoſt every part of this diſtrict, and much excellent cheeſe made; but I am of opinion, that many of what are called the better bred cows, are but indifferent milkers; and that the average produce of each cow is not more than three hundred weight of cheeſe in a ſeaſon. The famous breed of cattle ſold ſome years ſince at Mr. Fowler's of Rollright, on the edge of this county, at *enormous prices*, were ſuppoſed ſuperior to any other in England.. Mr. Fowler obtained the origin of that breed from Mr. Webſter of Canley near Coventry, who had improved his ſtock by croſſing them with the long-horned Lancaſhire breed of cattle; and from his ſtock may be traced many of the fineſt cattle that are now in the county, of which there are great numbers. Yet, on the whole, there are ſtill greater numbers of coarſe-made cattle in this diſtrict; and many of them which are made in a handſome frame, are (as was before obſerved) greatly deficient in that moſt eſſential article, milk. A croſs between the Warwickſhire long-horned and the Holderneſs ſhort-horned breeds, would probably be an improvement to the breed of cattle in this county; the former are oftentimes narrow and ill-made in the hind-quarters, and many of them coarſe in the neck and forequarters; the latter are moſtly, in ſhape and make, the reverſe of the former, and are generally eſteemed *good milkers.* One inſtance of ſuch a croſs I ſhall take the liberty to relate.

Lord Aylesford had ſome years ſince an Holderneſs cow of uncommon ſize and good ſhape, (bought from Mr. John Deverill of Wilford); and had alſo a large coarſe long-horned bull. The produce of thoſe two animals was a bull-calf, remarkable for his beauty, which being cut, and, from three years old, worked exceſſively hard in his Lordſhip's ox-team till he was ſeven years old, was, about Chriſtmas, taken from the team, and fed with hay of an indifferent quality, till the firſt week in May, when he was turned to graſs; where he continued till the latter end of November, was then houſed, kept with oil-cake, cut ſtraw, hay, &c. till March; at which time he was the fatteſt and moſt complete ox (his horns excepted) that I ever ſaw, and was ſold to Mr. Beaufoy of Meriden, (never ſhewn for money) *to kill*, for fifty guineas, without abatement.

THE PROFIT OF SMALL ANIMALS FOR GOOD LAND CONSIDERED.

Formerly the breed of cattle and ſheep in this county was larger than it is at preſent, becauſe the finer-boned rams and bulls have been of late bred from; and although it is believed by many, that this lighter-boned ſtock are beſt on particular ſorts of land, yet numbers of well-informed graziers are of opinion, that large cattle and ſheep, on rich fen and other good lands, will anſwer better than the ſmaller kinds. The land here meant may probably be let at 32s. per acre, and its whole produce of green food, in one year, be eight tons; in that caſe, each ton of green food will coſt about four ſhillings only. Large cattle or ſheep will ſometimes produce a profit equal to the whole value of ſeveral ſmall ones, and are

ſaid

ſaid to grow fat ſooner *than ſmall animals of an equal weight*, becauſe they lie thinner on their paſture, and ſtain it leſs. I know that cattle, which are well SELECTED, may *lay their meat* on the *roaſting* and *better joints*; but I do not know of any breeders that can with truth boaſt of *ſuch a* BREED.

FRENCH OXEN.

In ſome parts of this county, French oxen have been lately introduced, and, as far as I am able to judge from appearances, and the information of diſintereſted men, they are much inferior to thoſe of our own country.

DEVONSHIRE CATTLE.

Devonſhire cattle have alſo been uſed, and bred from, in this diſtrict; and they are ſpoken highly of by ſeveral graziers. I have lately ſeen ſome beautiful *little* cows and oxen of that kind, at Mr. Moor's of Charlcot, who is making experiments with them, and with French oxen. It is admitted, that the Devonſhire cows give but a ſmall quantity of milk; from which moſt material conſideration, and from their very ſmall ſize, it appears to me, that they are not proper ſtock for the better kind of land in this county. From a conſideration of theſe circumſtances, and from the better information of others, the Board may probably be led to inveſtigate this ſubject more fully, and to aſcertain what kind of ſtock is moſt profitable to be uſed on rich paſtures; but on all inferior paſtures, in warm ſituations, where large animals can neither be raiſed nor made fat, the preſent mode of breeding them, with light bones, &c. may probably be found to anſwer beſt.

PIGS.

The breed of pigs in this county had formerly remarkably large ears; they would, when two years old, and fat, weigh from ſixteen to forty ſcore each: but that ſort has of late been mixed with the Berkſhire kind; and their produce, though of a leſs ſize, is thought to be more profitable.

WASTE LANDS.

THE waſte lands in this county, including the roads, I have eſtimated at 120,470 acres; and, like all other lands, the firſt ſtep to be taken for their improvement is draining, where neceſſary. If that is effectually done, or if naturally dry, the propriety of its future uſe, for the purpoſes of agriculture or planting, muſt depend on its ſituation, as to roads, markets, and *manure*; and more eſpecially thoſe ſorts of manure, lime or marl, which, in the firſt inſtance, are moſt neceſſary for bringing it into a ſpeedy ſtate of production, and on its being tythable or tythe-free. If, from theſe circumſtances, converting it to wood-land ſhould be found moſt proper, the nature of the ſoil will beſt point out the kind of timber and underwood proper to be planted; but, however this may be, all the new hedges or fences which are hereafter to be made, for the ſubdiviſion of waſte lands or open fields, ought, in my opinion, to be abundantly planted with all the different ſorts of foreſt trees, adapted to the nature of the ſoil. This I mention, becauſe it has been much neglected in Warwickſhire, and many other counties; an opinion having prevailed, that the injury done to hedge-rows, and to the adjoining grounds, by ſuch planting, is more than equal to the value of the timber that can be ſo raiſed. I have before ſuppoſed the average ſize of the new incloſures that have been made in this county to be fifteen acres; if ſo, each cloſe, by fencing one ſide and one end, has 550 yards in length, on which timber might have been planted with the quick, &c. and if five yards and a half be allowed for two trees to be thus planted, (which is, I think, ſufficient ſpace for a few years, when properly pruned and trained) then each cloſe of that ſize would have 200 trees growing on its fences for ſome years, which might be profitably reduced by taking out the underlings, ſo as to leave near 100 trees for timber, which, in ſome inſtances, perhaps many, would in 100 years or leſs, be worth the fee-ſimple of the land they ſurround, without much, if any, injury to the occupiers; becauſe, in cloſes of that ſize, their ſhelter and protection from cold winds, &c. may probably be equal to every damage done by their growth. From theſe, and other conſiderations, it may be found adviſeable for gentlemen of landed property, to take the management of all fences into their own hands, as is the caſe with ſome whom I know, by which poſterity may have an abundance of timber for the navy, and other purpoſes, and may, looking forward but few years, receive more than an ample recompence for all their expence and trouble. Sutton Coldfield and Sutton Park, with the commons adjoining thereto, at Hill, Aſh-Furlong, New Shilton, Berwood, &c. are about 10,000 acres, the greater part of which is a hungry ſand and gravel, chiefly covered with ling; but the vicinity of Ruſhall lime-works, and the town of Birmingham, are circumſtances greatly in favour of the cultivation of theſe vaſt waſtes, which might (I have no doubt) be done with great advantage to the public and the land-owners. Coleſhill and Bickenhill heaths, about 1000 acres, now under improvement, are ſtill of an inferior quality; yet ſome parts of them will ſoon become uſeful land. Balſal heath, and other waſtes nearly adjoining, in the pariſhes of Berkſwell, Barſton, Knowle, at Wroxall, Shrewley, Hazeley, Lapworth, Packwood, Badeſley, &c. are about 5000 acres. Theſe commons, and thoſe in other parts of the county, have a large proportion of land, which, under proper cultivation, would become very uſeful for the purpoſes of tillage, grazing, &c.

Having here ſpoken of waſte lands, it may be proper to mention tythes in kind, as a great, and, in ſome caſes, an inſurmountable obſtruction to their effectual improvement. It is but juſtice to the clergy, in this county, to ſay, that, *on the whole*, they are more reaſonable in their demands for tythes in kind, than the lay-impropriators; and, where lands have been regularly and well cultivated for a great length of time, there is no great hardſhip in the occupier paying them, as, in that caſe, it is chiefly a tax on the land-owner, originating in cuſtom or title, prior to that by which the eſtate itſelf is held; but, where much improvement is wanted, and eſpecially in the cultivation of all fens, bogs, and other barren *unproductive* waſte lands, the matter is widely different; for, in ſuch caſes, almoſt the whole value of the land depends on perſonal labour, ſkill, induſtry, and the advance and riſque of private property: therefore, ſomething ſeems neceſſary to be done to remove ſo great a bar to the improvement of *ſuch unproductive land.* Whether corn rents, proportioned to the value of the land, could be adopted, or any other equitable means could be deviſed for that purpoſe, the wiſdom of Parliament, under the ſuggeſtions of the Board, is beſt able to determine.

PARING AND BURNING.

PARING and Burning may, in ſome inſtances, be of great uſe, where the ſurface of land is ſo matted together as not to be eaſily ſeparated by any other means, and where the under ſtratum is a peat of ſufficient depth; but I have ſeldom ſeen, in other caſes, that operation performed in this county without great injury to the land; indeed the practice is nearly exploded, except in the firſt-mentioned caſe.

WOODS AND UNDERWOODS.

THERE are large woods and much timber in the county of Warwick, particularly in what was formerly called the Foreſt of Arden, extending through a large portion of the middle part of it, which conſiſts of almoſt all the different kinds of foreſt-trees, but more eſpecially of oak. The woodlands of this county are, in general, kept under a regular ſyſtem, the underwood of which is cut down every ten or twelve years, and converted to various uſes, ſuch as rake, mop, and broom-ſtails, faggots, brooms, hoops, &c. Hurdles (ſeven feet and a half long and three feet and a half high) are made by being wattled round nine upright ſtakes, which are ſharp at the bottom, to aſſiſt in fixing them as a temporary fence; for eating off turnips, and other uſes, for which they make an excellent fence, during three or five years, if properly taken care of, and are ſold at 5d. each. The white poles (which are twenty-four years growth) are converted into rails, ladders, hoops, and various other articles, by cloggers, bruſhmakers, turners, &c. Much of the value of our underwood depends on a proper ſelection of plants at each fall to be ſet up, and continue growing for white poles, particularly aſh and oak; and this is beſt done by thoſe who fall and convert their own woods; for it is evident, that thoſe who buy them for a round or two, (as it is here called) will pay more attention to their own profit than to the future value of the woods:

woods, however they may be reſtrained by any agreement. The price of theſe woods is from 3l. to 8l. per acre, in proportion to the value of the land, as there are more or leſs of white poles, and the quantity of oak timber ſet up. But thoſe woods which grow oak well, anſwer beſt by being gradually converted into groves of that timber, which has been done in this county, by ſetting up oaks, either from maiden-plants or ſtubs, and by previouſly dibbling in acorns where wanted. By this means the underwood will be reduced in its value, after two or three falls. In woods which are brought under this management, great care is neceſſary in *pruning* and training the oaks when young, during the three falls here alluded to; for, if not properly pruned when *young*, all that can with ſafety be done to the branches of an oak, when the heart is formed in them, is to reſtrain their growth at ſome part where they divide into a fork.

By this management, upon good land, under favourable circumſtances, you may have 484 oak ſaplings on an acre (reckoning ten ſquare yards to each plant) at the end of three falls, or thirty-ſix years, without having much diminiſhed the value of your underwood; or if ſo, that diminution may be more than repaid by taking out ſome of the underling oaks: at the end of every twelve years, as many more of the underlings may be taken out as need requires, which will certainly be of more value than the underwood could have been. When, at the end of ninety-ſix years, having taken out 284 underling oaks, you may have 200 left on each acre, worth 30s. at an average, each tree: theſe may then be all axe-fallen, and their numerous ſhoots trained up as before; or, if fifty or ſixty of the beſt of thoſe young trees were ſelected, and left to grow on each acre, they might, in fifty years more, be probably worth five or ſix hundred pounds.

DRILL HUSBANDRY.

THE drill huſbandry is practiſed with Mr. Cook's machines in this county, to the ſouth of Warwick, by Mr. Moor, of Charlcot; Mr. Thomas Jackſon, of Alvaſton Paſture; Mr. Boot, of Atherſton on Stour; Mr. Bolton, of Wellſbourne; Mr. Chandler, of Kington; and by ſome others in various parts of this diſtrict. On loamy and other rich ſoils, the drill huſbandry may be found to anſwer, if the ſyſtem of making good turnip fallows is adhered to; but not otherwiſe, except in particular ſituations, where the ſoil is uncommonly rich, or where great plenty of *putrid* manure can be obtained. But the opinion of the greater part of the farmers in this county is in favour of the broad-caſt practice, and more particularly ſo reſpecting barley and oats, with which graſs ſeeds are generally ſown. Mr. Boot, of Atherſton on Stour, has been longer, and more largely in the drill huſbandry, both on ſtrong and on excellent light land, than any other perſon in this part of the kingdom. On looking over his farm, I find nothing to recommend the practice either in his fields (turnips excepted) his rick yards, or his barns; but the reverſe. The former are poor, and full of couch-graſs; and the latter ſcantily filled. His rotation of crops on the light lands is wheat, on clover lay a fallow for turnips, and, previous to thoſe turnips, vetches, as ſoon as the wheat is houſed, on ſuch of the land as is clean; after the turnips barley ſeeded down, and thoſe ſeeds grazed, or mown one year; then wheat, &c. as before. As he conſtantly drills his ſtrong land, and as wet ſeaſons have oftentimes prevented him, by that method, from cropping that ſtrong land, it ſometimes lies fallow for *ſeveral* years together, and no ſpecific courſe of cropping has been purſued upon it, as I was informed by his neighbours, (for Mr. Boot was unfortunately from home, when I called there);

not has his produce, by about fifteen years drill huſbandry, been nearly equal to that of his predeceſſors in the broad-caſt way. Some of my information on this ſubject may, it is poſſible, have been given with prejudice. It muſt be confeſſed, there is ſomething ſo pleaſing in the theory of what is called the New Huſbandry, that every well wiſher to his country muſt be deſirous of contributing to its practicability and ſucceſs. No one can diſpute the advantage which is obtained, by drilling, of deſtroying thoſe weeds which grow on the *ſurface* of the land; no more ſeed is made uſe of than is abſolutely neceſſary, and that is put in at the proper depth for vegetation; yet, as ſomething depends on ſeaſons, much on ſcarifying, hoeing, and other circumſtances, doubts have ariſen amongſt practical farmers, on what kinds of land this ſyſtem of huſbandy can be profitably employed. If what ſeems doubtful be admitted, that the produce of land by the drill is more than by broad-caſt, it muſt alſo be admitted, that the expences of the former will be greater than the latter. Upon the whole, the drill ſyſtem muſt be left to time, and the effect of ſucceſsful practice to eſtabliſh in this county. Mr. Plant, of Bedworth, has for ſome years hand-hoed his wheat, ſown in the broad-caſt manner, and obtained abundant crops by it. Mr. Thomas Jackſon, of Alvaſton Paſture, near Stratford on Avon; Mr. Moor, of Charlcot; and Mr. Bolton, of Wellſbourne, in the ſame neighbourhood, and ſome others who are good drill farmers, will, I have no doubt, at ſome future time, communicate the reſult of their experiments and practice to the Board, if called upon.

One ſhrewd remark of a wealthy broad-caſt farmer, during my enquiries on this ſubject, I cannot help repeating: "Several of theſe drill men, ſaid he, rent better and cheaper "farms than I; they boaſt of obtaining a much greater

“ quantity of grain per acre than I do, and with half the
“ ſeed: but I know that ſome of them do not get rich.”

GREEN CROPS.

THE green crops cultivated for cattle in this county, are moſt of the artificial graſſes, turnips, vetches, potatoes, cabbages, carrots, &c. Red and white clover, trefoil, and ryegraſs are in general uſe, as are turnips alſo. Winter and ſpring vetches are much uſed. The former (vetches) ſometimes mixed with a few oats, or beans, to keep them up, are ſown about Michaelmas, on lands (either broken up from turf or ſtubbles) which are intended for a wheat fallow, or if clean, for turnips; and the latter are ſown in February or April, and at other times between thoſe periods, ſo as to produce a conſtant ſucceſſion of them, fit for horſes, cattle, ſheep, &c. to feed on. The manner in which theſe are uſed, is to cut them while green, and to lay them in rows, near to horſes or cows, which are tethered in the field, or in the fold with ſheep: theſe tethers or folds are ſo moved as to give an equal diſtribution of manure to the land; but the beſt managers cart them to their ſtables, yards, or open ſheds; and there, by uſing plenty of ſtraw, ſtubble, &c. raiſe a prodigious quantity of manure. Early graſs from well watered meadows, and clover, are ſometimes uſed in the ſame way. The improvement and profit of well managed farms may be ſaid to depend more on the proper uſe of green foods (cut and given to cattle, &c. in the manner before mentioned) than on any other ſingle article. This circumſtance cannot be impreſſed on the public mind too ſtrongly.

Turnips are ſometimes uſed, in nearly the ſame manner, and are often carried to graſs fields.

Potatoes, ſown in drills, I mean for cattle, are gaining ground; but cabbages and carrots ſeem to make but little progreſs. From ſome experiments made by Sir Roger Newdigate, red cabbages ſeem better than any other; they grow to a good ſize, bear the winter well, and are more ſolid in their texture than any other ſort. Burnet and Lucerne have been grown ſucceſsfully, on a *ſmall ſcale*, on rich lands, but are not at preſent likely to be much cultivated; nor are cole or rape in much requeſt.

The Swediſh turnip has been lately introduced, and is ſaid to ſtand the winter much better than any other green food. That fact I have reaſon to believe: but the two laſt winters having been ſo mild, their remaining perfectly ſound through them till April, (which I ſaw) is not an abſolute proof that they would have done ſo if thoſe winters had been more ſevere. Vetches and buck-wheat are ſometimes, not often, ſown on fallows, and ploughed in for manure. Chicory has been tried by Mr. Moor, of Charlcot, on a large, and by Mr. Thomas Jackſon, on a *ſmall ſcale*. The former gentleman, I am told, diſlikes it; but with the latter it anſwered very well; was twice cut, produced a large quantity of green food; and was eaten greedily by his horſes.

LIME.

HAVING already mentioned the manures made uſe of from the large towns of this county, I ſhall here beg leave to ſay ſomething on the ſubject of *lime*, becauſe its uſe is much, and very expenſively miſtaken in many parts of this diſtrict;

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vaſt quantities being every year uſed improperly, where it ſeems to have no other effect than aſſiſting to impoveriſh the land on which it is ſpread. I ſhall endeavour to explain its real uſe, by reciting ſome experiments, which I made a few years ſince, in order to aſcertain the moſt ſpeedy method of bringing barren waſte-land into a productive ſtate of cultivation.

Some years ago, Lord Aylesford having encloſed and drained Meriden Heath, (and ſettled the vicar's claim by a *corn rent*) ſixty acres of it were ploughed up, in the winter months, and in the ſpring following, well harrowed, to cloſe the furrows, and in that ſtate left to rot till the following autumn. The whole was then croſs ploughed and harrowed. In order to pulverize ten acres of the beſt of this land, I had a roll made five feet and a half long, ſurrounded by five ſtrong ſharp plates of iron, ſo that the ſharp edges of the plates of this roll, when loaded, and drawn by ſix horſes, cut through the whole ſurface as deep as the plough had gone at the firſt ploughing; and by repeated harrowing, and the operation of this roll, the land had the appearance of being ſufficiently well pulverized for a crop, except only, that by thoſe repeated operations a great quantity of moſs, and the roots of different coarſe graſſes, &c. were brought to the ſurface: theſe we collected into heaps, burnt, and ſpread the aſhes, which produced a good dreſſing. The land was ſown with oats, in March, and ſeeded down with clover and rye-graſs; the oats, when cut and houſed, the next autumn, did not produce ſo much as had ſown the land, nor any ſeeds worth ſaving. Three other parts of the ſame piece (ten acres each) were pulverized, and the roots, &c. burnt in like manner, at the ſame time. One part was treble folded with a flock of one thouſand ſheep; one part was well dreſſed with good rotten dung; and the other part was well limed. Theſe three pieces were alſo ſown with oats, clover, and rye-graſs.

That which was folded, had not a bag of oats on an acre, nor were the ſeeds worth ſaving; that which was dunged, ſucceeded very little better; and that which was limed, produced a moſt excellent crop of oats and ſeeds. Another piece of ten acres, prepared in the ſame way, was marled, and produced a tolerable crop of oats and ſeeds. The remaining ten acres were limed, prepared, and ſown with rye, at Michaelmas; and the ſpring following, ſeeds harrowed in, which produced a very fine crop. Upon the future management of this land, that part of it which was before limed, continued conſtantly productive; and the other parts not ſo till they were limed; the piece that had been marled only excepted, which, from its calcareous quality, I conſider as having the ſame effect on vegetable ſubſtances as lime, with the addition of earth of ſuch a quality, as, uniting with looſe peaty ſoils, makes an excellent manure for them. From theſe experiments, and from many others which I have made with *lime*, both on cultivated and uncultivated lands, I am clearly of opinion, that the chief uſe of lime, perhaps the only one that can anſwer the expence at which, in ſome parts of this county, it is brought home (three pounds for a common waggon load) is in the cultivation of heath, peaty or common lands; I might ſay of all *other* lands, where the parts of vegetables have from time to time been permitted to fall on the ſurface of the earth, and there, by long accumulation (not being of themſelves capable of rotting) to produce a variety of coarſe ſurface, ſometimes ſtrongly matted with roots, and ſometimes a light, and, as it were, a frothy ſurface, &c. Lime in ſuch caſes will ſeize on all thoſe imperfect vegetable ſubſtances, and by its ſeptic quality, convert them into vegetable mould, in which all kinds of grain and graſſes grow luxuriantly. In well pulverized light ſoils, where the turf, and other vegetable ſubſtances, have been well rotted before uſing it, I never could perceive that lime was of any uſe. From theſe premiſes it appears

pears evident why lime forms ſo eſſential a part of thoſe compoſts which conſiſt of earth and vegetable ſubſtances.

NEW EXPERIMENT.

MR. BLAKESLEY of Exhall, (who is able to give much information on the ſubjects of agriculture and breeding) has lately made a valuable experiment, by *mixing* two waggon loads of tan (after it has been uſed by the tanners) with one waggon load of *unſlacked lime*, which lay together for a week, and was uſed as a top dreſſing for turnips and for graſs lands, and found to be a moſt excellent manure; perhaps lime may contribute to open and ſeparate the parts of ſtrong clays: but, however that may be, when conſtantly uſed on any land, without an adequate proviſion of turf or vegetable food for it to act upon, lime will, in my opinon, totally exhauſt all kinds of land. The principles on which lime acts, may poſſibly have been better underſtood and explained by others; but the very improper uſe which is made of it in many parts of this county will, I hope, be ſome excuſe for ſaying ſo much on the ſubject.

BRITISH MUSEUM

AP-

APPENDIX

TO THE

AGRICULTURAL VIEW

OF THE COUNTY OF

WARWICK.

BRITISH MUSEUM

APPENDIX.

No. I.

WARWICKSHIRE, like the other counties in England, being divided into hundreds, and having, in the whole, nineteen chief conſtables, who iſſue precepts, and collect the county-rates, &c. from the petty conſtables in each pariſh or conſtablewick, ſome of which are not extenſive; if the Board were to obtain a Report from each of thoſe chief conſtables, the particulars of which would be furniſhed by the petty conſtables in their reſpective pariſhes, at a ſmall expence, conformable to printed Queries, to be delivered to the chief conſtables, the *exact ſtate* of agriculture and breeding, and their progreſſive and particular improvements, not only in this county, but in every diſtrict of the kingdom, might be annually and accurately known. Papers, which I gave to Mr. Cruchman and Mr. Slater, two of the chief conſtables, in part filled up, one of which is hereunto annexed, may beſt explain my ideas on that ſubject. The expence attending the procuring of this information being trifling, each county might eaſily defray it, without any charge to the Board of Agriculture.

The following are the Queries drawn up for that purpoſe, and a copy of the Return by Mr. Slater, one of the chief conſtables of the hundred of Kington.

QUERIES

PROPOSED TO BE SENT TO THE

CHIEF CONSTABLES OF EACH HUNDRED,

IN ORDER TO OBTAIN THE NECESSARY INFORMATION FROM THE PETTY CONSTABLES OF EACH PARTICULAR CONSTABLEWICK.

WHAT are the pariſhes or hamlets in your conſtablewick, and how much in the pound are the poor's rates?

What is the quantity of common or waſte land, excluſive of roads?

What is the length, and in what repair are the turnpike roads?

What is the length, and in what ſtate are the private or bye-roads?

What is the quantity of open field land?

What is the quantity of meadow-land? And what the quantity of grazing-land?

What is the quantity of land which is alternately ploughed for grain, and ſown with graſs-ſeeds, and what is the courſe of huſbandry?

What is the quantity of wood-lands?

What are the proportions of land, loam, clay, and other ſoils?

What is the number of each ſort of horſes, cows, oxen, ſheep, hogs? And are any ox-teams uſed?

Who are the graziers or farmers moſt remarkable for their improvements in the breed of cattle and ſheep, or for their improvements in agriculture?

Would carriages, with wheels nine or ſix inches broad, drawn with horſes geered double; or would thoſe with ſix-inch wheels, drawn with horſes geered ſingle, be moſt uſeful in your pariſh, on the public and private roads, taking into conſideration the uſe of carriages for the purpoſes of agriculture?

Is your pariſh tythable, or tythe-free? And are thoſe tythes in the hands of lay-impropriators, or the clergy? And what is the compenſation paid for them?

What are the improvements that have taken place, or are now going forward?

What are the rivers and other ſtreams?

What water-meadows are there, what is their produce, and how are they managed?

What are the towns, the number of houſes occupied by gentlemen and tradeſmen, the number of inhabitants, and what are the trades carried on, &c.?

What are the different manures made uſe of?

What are the green foods, how are they cultivated, and how uſed?

What is the ſtate of cottages and of the poor? Are there any clubs or friendly ſocieties for their ſupport?

What is the average produce of the different ſorts of grain and green food per acre?

What are the parks, foreſts, or chaſes, and their quantity?

What are the canals?

Are there any mines of coal or lime, &c.? And to what extent are they worked or ſent, and at what price ſold?

What fuel is uſed, from whence brought, and at what price?

What is the whole rent and land-tax of the pariſh?

Mr. SLATER's RETURN.

CONSTABLEWICKS OR PARISHES.	Quantity of land.	Waſte and roads.	Open field land.	Grazing land.	Meadow land.	Arable land, that is, up and down.	Wood land.	Number of ox teams.	What is the length and ſtate of the turnpike roads.	What is the length and ſtate of the private roads.	What are the poor's rates in the pound.	Tythable, or tythe free.	Number of broad wheeled carriages.	Numb. of narrow wheeled carriages.	Horſes drawn double or ſingle.	Are cattle or ſheep chiefly kept.	What is the proportion of light, ſtrong, and other different ſorts of land.	Land tax, at 4s.
									miles	miles								£. S. D.
Illmington, - - -	2500	—	—	400	100	2000	—	—	—	—	—	—	—	—	—	Sheep,	One-ſixth light, five-ſixth ſtrong,	
Compton Scorpion, - -	650	—	—	350	150	150	—	—	—	—	—	—	—	—	—	Cattle and S.	Strong, - - - -	
Whitchurch, - - -	2500	200	1800	—	200	300	—	—	—	—	—	—	—	—	—	Sheep,	Three-fourth light, 1-4 ſtrong,	
Atherſtone, - - -	750	—	—	—	50	700	—	—	—	—	—	—	—	—	—	C. and ſheep,	Ditto, Ditto,	
Eatington, - - - -	3370	300	2200	400	350	20	100	—	—	—	—	—	—	—	—	Do. Do.	One-third light, two-third ſtrong,	
Whalcot, - - - -	1130	80	970	—	80	—	—	—	—	—	—	—	—	—	—	Do. Do.	Strong, - - - -	
Oxhill, - - - - -	1830	80	1300	300	150	—	—	—	—	—	—	—	—	—	—	Do Do.	Ditto, - - - -	
Tyſoe, - - - - -	2700	200	2200	—	320	—	—	—	—	—	—	—	—	—	—	Do. Do.	Ditto, - - - -	
Radway, - - - -	1030	10	—	500	300	190	30	—	—	—	—	—	—	—	—	S. and oxen,	Ditto, - - - -	
Kington, - - - -	1800	30	—	520	250	1000	—	—	—	—	—	—	—	—	—	S. and cows,	One-half light, one half ſtrong,	
Chadſhunt, - - - -	1450	6	—	824	260	330	30	—	—	—	—	—	—	—	—	S. and cattle,	Strong, - - - -	
Combrook, - - -	1305	5	—	320	80	900	—	—	—	—	—	—	—	—	—	Do. Do.	One-fifth ſtrong, four-fifth light,	
Gaydon, - - - -	1380	10	—	600	260	500	10	—	—	—	—	—	—	—	—	Do. Do.	Five-ſixth ditto, one ſixth ditto,	
Compton Verny, - -	840	10	—	500	200	80	50	—	—	—	—	—	—	—	—	Do. Do.	Cold clay, - - - -	
Lighthorn, - - -	1620	30	—	300	80	1200	10	—	—	—	—	—	—	—	—	Do. Do.	Three-fifth ſtrong, two-fifth light,	
Buttlers Marſton, - -	1505	5	—	300	150	1050	—	—	—	—	—	—	—	—	—	Do. Do.	Strong cold clay, - - -	
Halford, - - - -	905	25	—	100	60	720	—	—	—	—	—	—	—	—	—	Do. Do.	Nine-tenth ſtrong, one-tenth light,	
	27265	991	8470	5414	3020	9140	430											

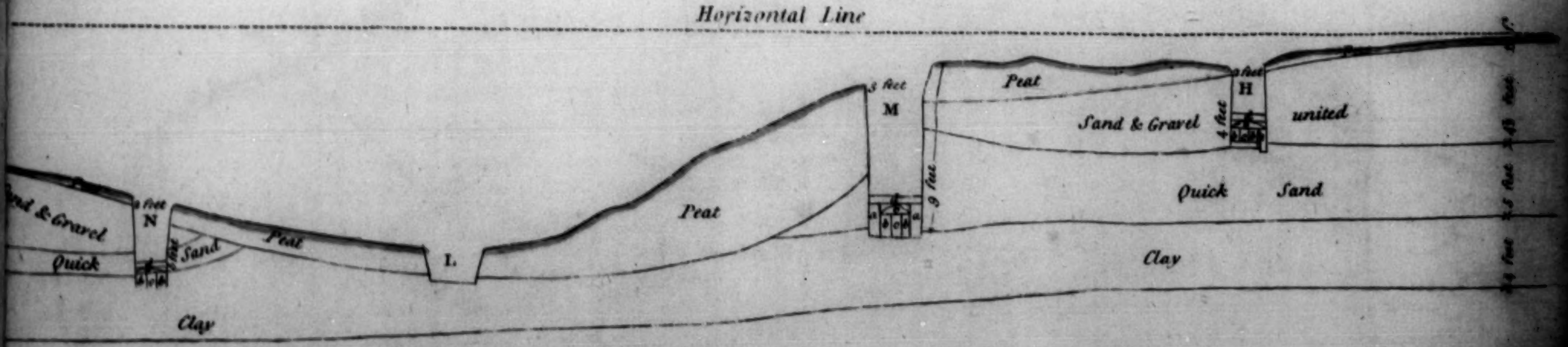
No. II.

OBSERVATIONS ON DRAINING LAND.

IN every country there are large portions of land, that in wet ſeaſons have always what may be called a dry ſurface, and other portions of land, that have always a moiſt or wet ſurface; the former of thoſe portions, admitting all the water which falls upon them, to ſink freely through their pores to various depths, till falling on clay, or ſome other unctuous earth, whoſe pores will not permit it to paſs through, it is there held up to a height proportioned to the quantity of water which comes upon it; and the facility with which that water is diſcharged, thus held up to various heights, it ſerves as a fountain to diſtribute its water, (either by veins of ſand, pebbles, or rock) according to the formation of the different under ſtrata, on the neighbouring lands, and there forms bogs and other varieties of wet ſurface, on a baſis that will, I believe, be always found to conſiſt of marl, clay, or ſome mixture thereof. The effect of water thus diſtributed, may be divided into two claſſes. The *firſt claſs*, when the water is thrown out by a body of marl or clay, &c. upon the ſurface of deſcending ground, and in the valley (there held up by clay alſo) forms bogs or ſwamps, &c. The *ſecond claſs*, where the water is held up by marl or clay, &c. as before, having above that marl, or clay, a ſtratum of ſand or pebbles, &c. through which the water paſſes; and above that ſand or pebbles, &c: another ſtratum of marl or clay, &c. through the weakeſt parts of which the water, by a continual preſſure from its fountain, forces a paſſage upwards; and thus, through the weakeſt parts of the marl or clay, furniſhes a continual ſupply of water on the ſurface, for the formation and growth of bogs, &c. in proportion as this water is more or leſs abundantly ſupplied by its fountain, or head; namely, the higher lands, into which the rain water, &c. freely paſſes, as before deſcribed. There are alſo different ſoils, under different circumſtances, which may form a *third claſs* of land for draining, ſuch as ſtrong deep ſoils, or open light ſoils, having near the ſurface a body of marl or clay. In either of theſe caſes, the water which falls on the ſurface muſt, for reaſons which are ſelf evident, keep ſuch land, in rainy ſeaſons, conſtantly wet and cold; and it ſhould be obſerved, that a mixture of all the three before deſcribed claſſes of wet land, ſometimes occurs in one field, by ſudden alterations of the under ſtrata, and thereby perplexes the operator, by requiring all the different modes of draining in the ſame field. If it be admitted that bogs are thus formed and fed, their cure may be effected with certainty. The *firſt claſs*, by cutting through the ſtratum (be it ſand, gravel, or rock) that conveys the water to the bog, and carrying off that water by a cloſe drain to ſome proper place, where the level admits of its diſcharge. The *ſecond claſs*, by ſinking a drain to any convenient depth in the upper clay, and then at a ſmall diſtance, on one ſide of this drain, dig, or with a large auger bore through the remaining part, be it (the upper clay) ever ſo deep, into the under ſtratum of ſand, pebbles, or rock, &c. through which the water paſſes, and it will then ruſh up into the drain, ſo made, with a velocity proportioned to the height of the land, or fountain, from whence it is ſupplied. As this drain advances through the land, holes muſt be dug or bored as before, every ſeven yards, or at ſuch diſtance as the ſtrength of the ſprings may require, and the whole of the water thus brought up by tapping the ſprings, carried off by the drain (made in the upper clay) which muſt be a cloſe one, to its proper level, and there diſcharged. By both theſe methods of draining, large tracts of land, under favourable circumſtances, may be cured with one drain. The beſt place for fixing theſe drains is generally where the ſtratum, that conveys the water, comes neareſt to the ſurface; and the beſt method of aſcertaining that is, to bore or dig in different parts, through the different under ſtrata. The *third claſs* may be eaſily cured by cloſe drains, at ſuch diſtances and depths as will beſt carry off the *ſurface water*; I mean eaſy in execution, but not ſo as to expence. Sections might have been added of the different ſtrata, compoſing theſe *three claſſes of land*, but a reference to the ſections of the land drained, here annexed, may anſwer that purpoſe. The firſt claſs of bogs, or wet land, may be ſeen by referring to the ſection No. 1; and the ſecond claſs, by referring to the ſection No. 2. That of the third claſs requires no further explanation. It may not be improper to obſerve, that where the different ſtrata (or meaſures) crop out, that is, become gradually more and more ſhallow, in ſome certain direction (as is often the caſe) till one after the other, they all preſent themſelves, in ſucceſſion, on the ſurface of the earth. In ſuch caſes, draining may often be much more eaſily and better effected by croſſing (with the drain) the different ſtrata or meaſures, where the levels and other circumſtances will admit.

Incloſed are the plans and ſections of three pieces of common or waſte land, which I drained in the year 1791: the red lines on the different plans mark the places where the drains are made, and an arrow (thus →) denotes which way the water runs in theſe drains. The plan, No. 1, repreſents part of a common in the pariſh of Church Bickenhill, in the county of Warwick, in my own occupation (as a tenant to the Earl of Aylesford). That part of it between the lines AAA, BBB, was covered with moſs and ling, has a peaty ſurface about 6 inches deep, and produces little or no graſs. In all wet ſeaſons it was filled *quite to the ſurface*, and often overflowing with water. That part between the lines BBB and CCC, was much more unſound, deeper of peat, and covered with moſs, in moſt parts nine inches long. That part, between the lines CCC and DDD, was an abſolute bog in all ſeaſons. The *ſection* to the plan No. 1, will aſſiſt in ſhewing the manner in which this land has been drained, and refers to that part of the ſurface marked with the lines E F G, with the different ſtrata, in a perpendicular line under the ſame, together with the manner of cutting the drains and laying the ſtone, &c. therein. Having dug or bored with a large auger into ſeveral parts of the land, between the lines AAA, BBB, and CCC, I found peat, gravel, and ſand, mixed, and a quickſand, almoſt uniformly. The quickſand in every part, after getting an

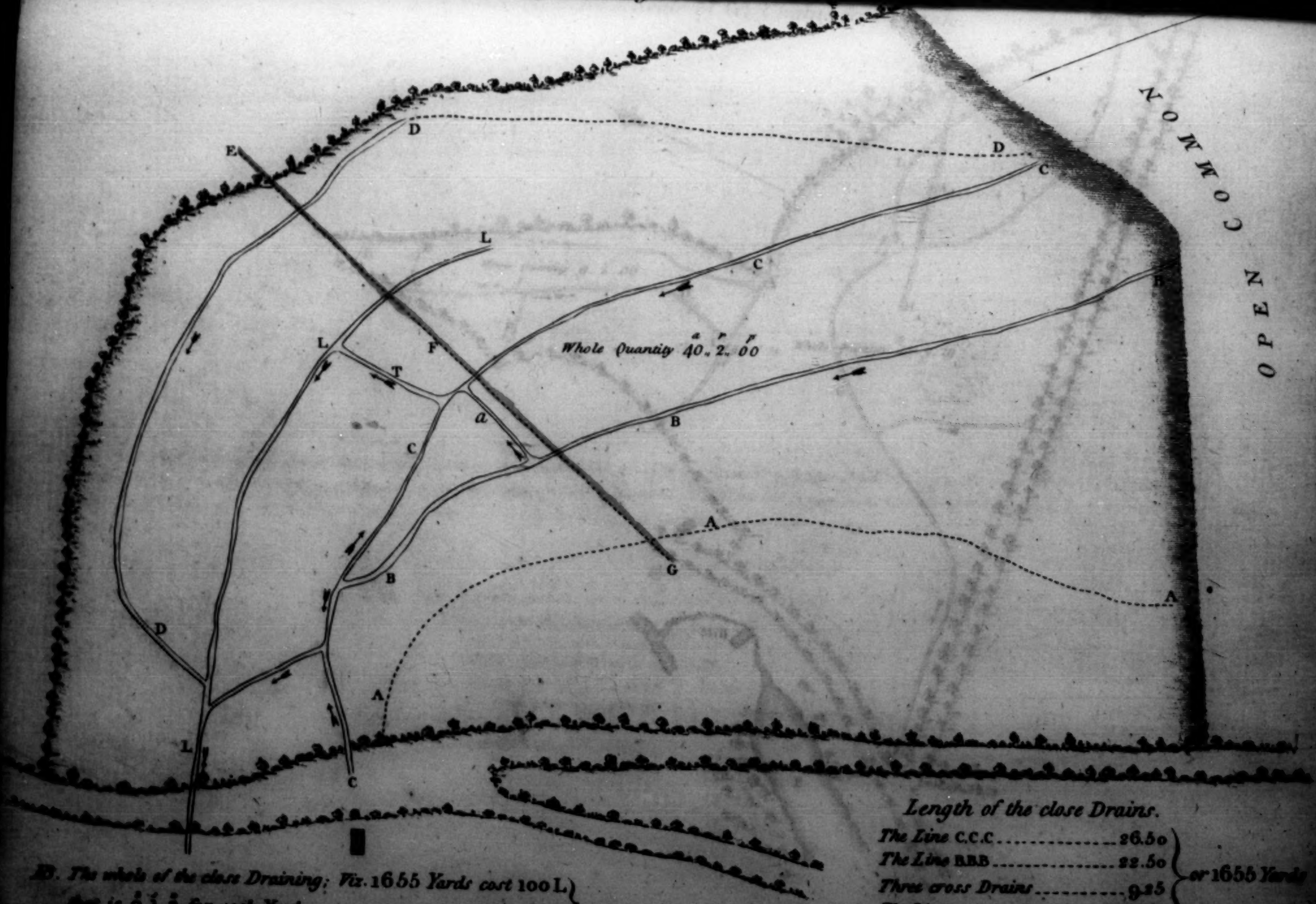
SECTION to Plan No. 1.



NB. The Scale of the Plan to which this Section refers; (and the same should be observed of the other Section) is so small, as not to admit of the Drains and under Strata, to be explaind by it: therefore the Surface Line of this Section (which is mark'd Green) is sketch'd by a larger Scale, and the different Strata in a perpendicular direction under that Line, together with the close Drains, and their constituant Parts, are Sketch'd by a still larger Scale. —

REFERENCE to the Sections.

a.a (In the Drain at M) Peat turfs placed Edgeways.
b.b.b. &c. Sides and coverers of Stone in all the Drains.
c.c. &c. The open part of all the close Drains.
d.d. &c. Turf coverers to all the Drains.
e.e.e. In the Drains H.O & P. represent the side holes &c.
L. The Main open Drain.
N.M.H. Three close Drains.


OPEN COMMON
Whole Quantity $\overset{a}{40}.\overset{r}{2}.\overset{p}{00}$
A
A
A
B
B
B
C
C
C
C
D
D
D
E
F
G
L
L
L
T
a

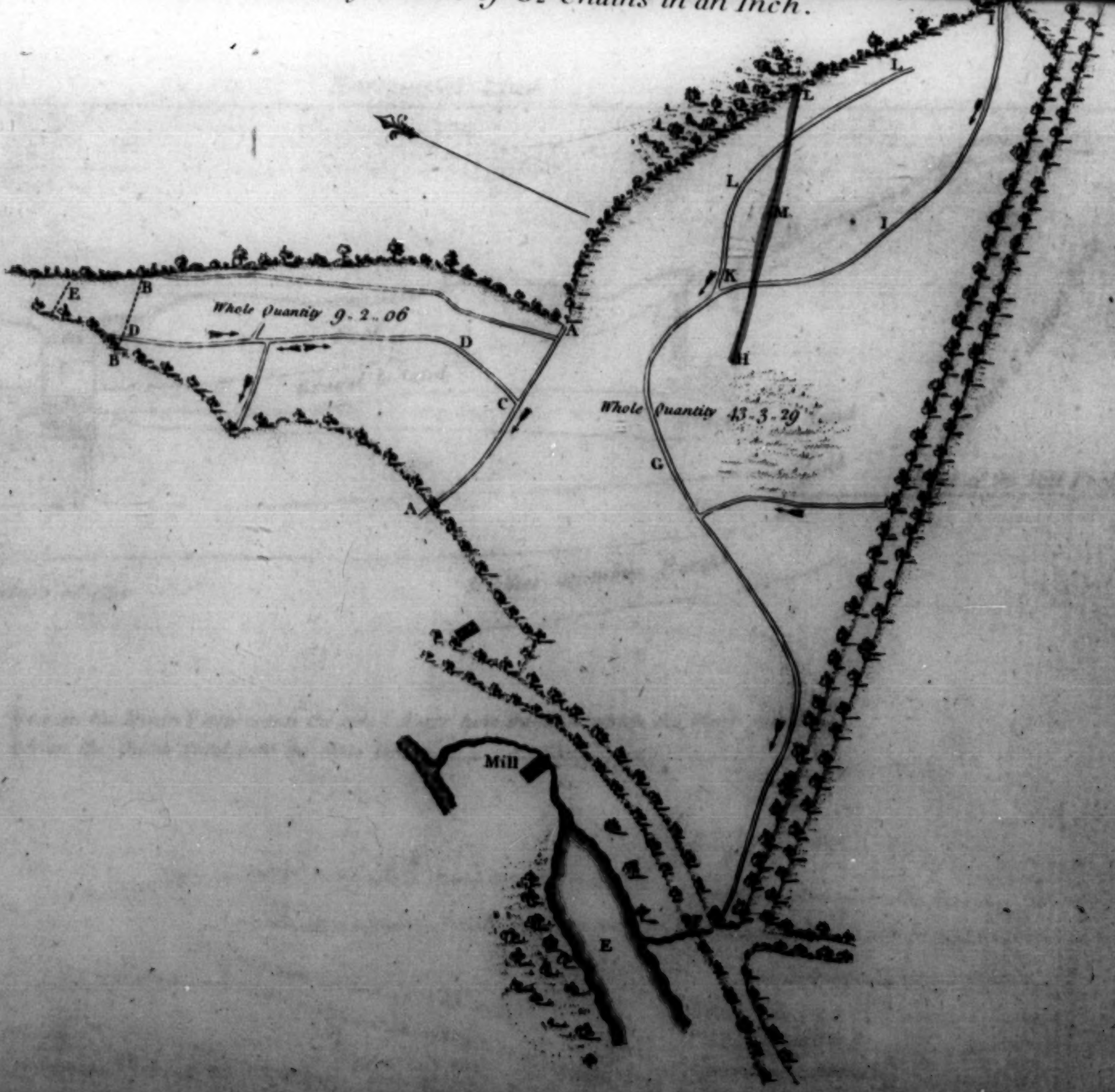
Length of the close Drains.

The Line C.C.C	26.50
The Line B.B.B	22.50
Three cross Drains	9.25
The Line D.D	17.00

or 1655 Yards

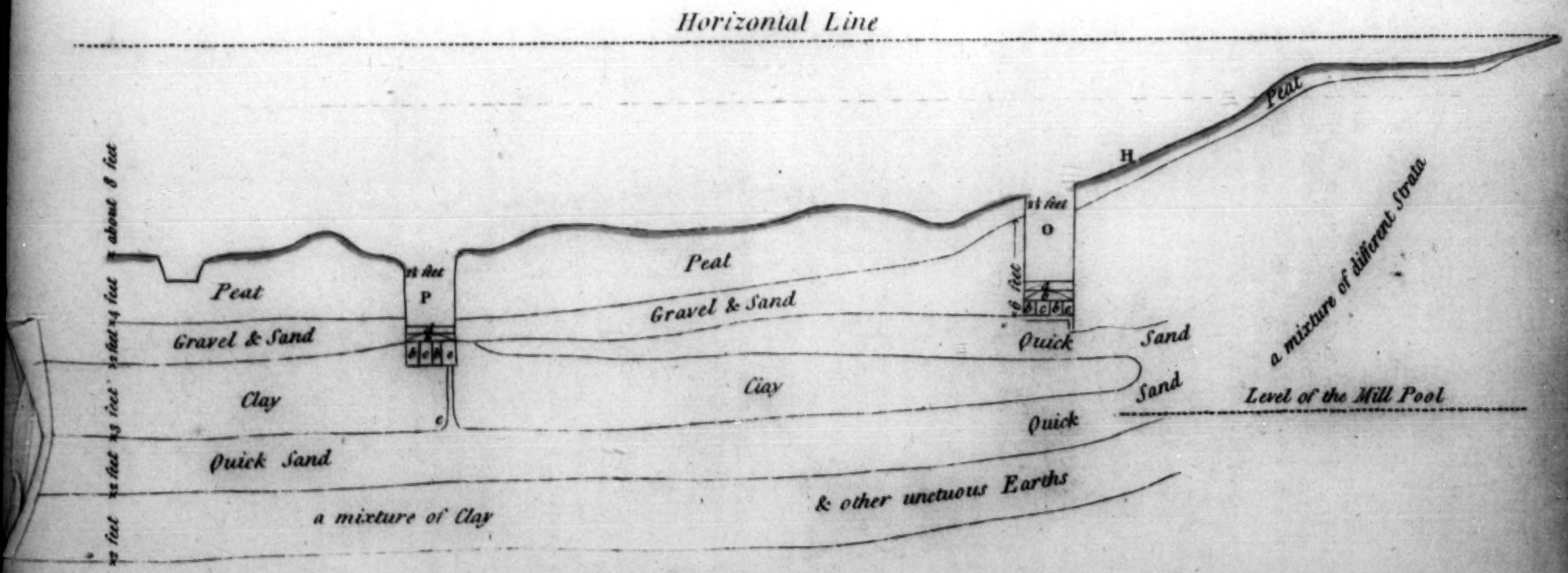
NB. The whole of the close Draining; Viz. 1655 Yards cost 100 L. that is $\overset{l}{0}.\overset{s}{1}.\overset{d}{2}$ for each Yard

PLAN N°. 2, by a Scale of 6½ Chains in an Inch.



Neele sc. Strand.

SECTION to Plan N.º 2.



{ e.e. (In the Drain P.) represents the side & Auger hole through which the Water passes }
{ from the Quick Sand into the close Drain .... }

inch or two into it, ſeemed almoſt as fluid as water. Judging from thence that no materials could be laid in it for a drain, but what the quickſand would immediately bury, I began the drain marked BBB on the plan: this drain I dug almoſt to the quickſand, leaving gravel, &c. of ſufficient ſtrength, only, to bear up the materials for a hollow drain; theſe materials were two ſides, and a coverer of ſtone, with a peat turf on the top, to keep out the ſoil. At every ſeven yards forward, by the ſide of this drain, I dug a hole into the quickſand, as deep as it would permit; from theſe holes the water roſe feebly into the hollow drain, and was by it diſcharged at a proper level. The following ſketch is a ground plan of this drain, and the holes adjoining the relative depth of which will be ſeen, by referring to that part of the ſection marked H, &c. It may be proper to remark, that the ſtone made uſe of for this drain, and all others here mentioned, is a red ſand and rag ſtone, from Meriden Quarry, about four miles from this place, which eaſily ſplits into proper ſizes, for the purpoſe, and is very durable; it coſt about 6d. per ton getting, excluſive of carriage. The drain thus formed, ran, on the whole, rather freely, and made the land dry for a few yards on each ſide thereof. But it was far from having the effect which I improperly expected; for by referring to the ſection, it will be ſeen, that the drain H could only take a very ſmall portion of the water from ſo large a quickſand, which did it not penetrate more than two inches, and that it could drain only to its own depth, (or at moſt to that depth in the fountain which ſupplied this quickſand) evidently appears; and it muſt be admitted, that a large quickſand, thus partially made dry, will abſorb moiſture in the ſame manner as a lump of dry ſugar, by applying water to any part of it. My purpoſe was thus defeated. I could, indeed, have drained this land, but not the bog below, by drains, the ſame as that before deſcribed, made parallel to each other at the diſtance of about ten yards; but this expence, the quality of the land would never have repaid. This miſtake, which coſt me about 20l. it was not neceſſary to have mentioned, but my motives for ſo doing cannot, I hope, be miſtaken. I now did what ought to have been done before, that is, examined the different ſtrata to a greater depth, and particularly on the bog, and at the upper edges thereof, and found them to be as marked in the annexed ſection; and conſequently the bog to be what has been deſcribed under the firſt claſs: I therefore determined to attempt the cure, in the manner which has been before preſcribed for that claſs, namely, to cut through the whole of the ſtratum (in this inſtance a quickſand) through which I found the water paſs, and this I effected in the following manner: The ſummer being dry, and favourable for the purpoſe, and having previouſly made my main open drain, LLL, I began my main cloſe drain (the firſt week in June, 1791) at T, three feet wide, on the declivity, near the edge of the great bog, as marked on the plan CCC. In the firſt operation we dug through the peat, the hard ſand and gravel, and one ſpade's graft (about nine inches deep, and ſeven inches wide) into the quickſand, the whole length of this drain, (which is ſeventy-three perches, of eight yards to the perch); the drain thus dug, ran copiouſly, not leſs than ſixty gallons per minute. In this ſtate I left it about nine days; the effect of it was rapid both above the drain, and on the bog below. Upon examination, I now found about three inches on the top of the ſpade's graft, which had been made into the quickſand, perfectly dry; we then dug out theſe three inches of dry ſand, to nearly the whole width of the drain, (three feet) and at the ſame time dug out another ſpade's graft from the top of the quickſand, as near the middle of the drain as poſſible: this was left to run a few days as before, and had the ſame effect, namely, three or four inches more of the top of the quickſand became dry and hard, the ſame operation was repeated again and again, with the ſame effect, till the purpoſe of getting through this quickſand was completed, ſo far at leaſt, as the level of the main open drain, L on the ſection, would permit. The ſtream of water continued increaſing during the whole operation. The bog below the drain, as far as the main open drain in the bottom, marked LLL, was quite dry, and the land above the drain was perfectly ſo to the line AAA. The drain which was firſt made at BBB, and continued running for ſome time, during the progreſs of the main cloſe drain, became gradually dry, and has not, ſince that drain was finiſhed, diſcharged one ſingle drop of water Great care was neceſſary in making the main cloſe drain, (marked M in the ſection) to keep the ſtream of water in the middle of it, otherwiſe the current would have undermined the ſides (as it ſometimes had done) and cauſed them to fall in. For this reaſon, it was neceſſary, when the dry ſand was taken from the top of the quickſand, *immediately* to take out a ſpade's graft from the *middle* thereof, in order to divert the current from its ſides. The main open drain, thus made, was three feet wide at top, about nine feet deep on the average, and bevelling a little from the top; it was about one foot ten inches wide at bottom. The ſtone, and other materials, were put into this drain in the following manner, (ſee the ſection thereof marked M): Where the drain went through the quickſand into the ſtratum of clay below it, as in moſt places it did, the bottom, and, in ſome inſtances, the ſides, wanted no particular ſecurity; but where it did not go quite through the quickſand (which the level of my main open drain would not in ſome places admit) the bottom of the drain was covered half an inch thick with ling; then peat turfs, one foot wide, and three or four inches thick, were cut into convenient lengths, and placed on their edges on each ſide the bottom of the drain, forming two ſides of a hough of peat (marked in the ſection aa); then ſide ſtones about eight inches high, and a ſtone coverer, were put in upon the ling, between the peat turfs, (marked in the ſection bbb); a large peat turf, near two feet wide, and four inches thick, were then cut, and firmly placed over the whole (marked in the ſection d.) This left in the bottom of the drain an open ſpace of more than ſix inches ſquare, (marked c in the ſection) for the water to paſs; the whole was then completed, by filling in the upper part of the drain. The land, from CCC on the plan to AAA, acres, is now ploughed for a fallow. The bog, from CCC to the main open drain, LLL, acres, will now bear a horſe; but as it was, before draining *quite a pulp*, I intend to give it next ſummer to harden, before it is ploughed.

That part of the bog between the main open drain, and the line DDD on the plan, is laid dry in the ſame manner as that before deſcribed, by drains marked DD, on the plan, with the difference, that the quickſand lay nearer the ſurface of the land, and was much thinner; therefore, the drain went through it ſo far into the clay, as to render ſide turfs in moſt places unneceſſary; its depth, on the average, not being more than five feet, as will be ſeen by referring to that part of the ſection marked N. The laſt deſcribed land, about eight acres, I intend to plough in March next for oats. I have this day, 20th Jan. 1792, meaſured the quantity of water diſcharged through theſe drains, by ſinking a hole near the ſide of the main open drain, and placing a caſk of known dimenſions therein, and find the diſcharge to be 504 gallons in one minute, or 72,576 gallons in twenty-four hours. The land thus drained, will, with *proper* cultivation, be worth at leaſt 14s. per acre. The draining of theſe thirty acres of land coſt me about 80l. excluſive of the ſuperfluous drain BBB. The whole length of theſe cloſe drains is 1655 yards.

I have alſo hollow-drained nine acres of my farm in the bottoms of three pieces of incloſed land, (called Small-ley Field, Old Land and Holiwell) by the method preſcribed for the third claſs of wet land: theſe drains were made a few yards below that part of each field where the dry and wet land ſeparate, about twenty-two inches deep, with ſides, and a coverer of ſtone and ling upon the top of it, to keep the earth from running in.

The length of theſe drains is 880 yards, and the expence of labour and materials 1½d. per yard. The drains, in wet weather, diſcharge a large quantity of water, and will, I have no doubt, anſwer the intended purpoſe.

The land on the plan No. II. is in the Earl of Aylesford's own occupation; that part of it between the lines AA and BB, containing acres, was almoſt an entire pulp. This bog was of the *ſecond claſs*, namely, water paſſing through a quickſand, and confined by a ſtratum of clay below, and another ſtratum of clay above it. The water thus confined, being preſſed by its fountain, and forced up through the weakeſt parts of the clay, had found a bog of irregular thickneſs on the ſurface, in ſome places ſix feet deep, and in others not more than two. As there is a conſiderable fall in this land from eaſt to weſt, I thought it expedient to put two drains into it, marked on the plan AB and CD; and this appears to me to have been neceſſary, from a conſideration that both theſe drains continue to run in the ſame proportions as when firſt opened. The manner in which theſe drains were executed was, by digging through the different upper ſtrata, and as deep into the clay as the main open drain ACA would admit; then digging or boring through the remaining part of that clay into the quickſand, at the diſtance of about ſix yards in a progreſſive manner, the water riſing rapidly through theſe holes into the cloſe drains, made, &c. as mentioned before, has effected a complete cure of this land, every part of which will now bear a horſe to gallop upon it. Theſe drains diſcharge 3360 gallons an hour, which is much leſs than they did at firſt, as in all bogs muſt be the caſe. I have not ſent any ſection of theſe drains, nor ſo particular a deſcription of the manner of executing them, as it would only have been a repetition of what has been mentioned before, or what will be deſcribed hereafter. This land will be worth 20s. per acre. The draining coſt 25l. and the length of the under-ground drains is 814 yards. The other part of the land on this plan No. II. about acres, I have juſt now finiſhed draining; and as this was intended to anſwer two purpoſes, one to drain the land, and the other to give an additional ſupply of water to the mill-pool, marked E on the plan; and as a circumſtance aroſe in the execution of this work, which frequently happens in draining land, namely, a ſudden alteration in the poſition of the under ſtrata, a ſection and deſcription thereof will not, I hope, be thought tedious: the red lines on the plan mark where the drains are made; the dotted line LMH, that part of the ſurface under which the ſection is made. This draining was begun at the level of the mill-pool at F, and continued along the line FGG, without any great difficulty, to H, and that in the manner before deſcribed, as a cure for the ſecond claſs of boggy land. But at H, or near that place, the under ſtrata altered their poſition; (ſee the ſection to plan No. II.) the quickſand, which conveyed the water, now became of twice its former thickneſs, and the clay, which had hitherto been above that quickſand, now, for ſome diſtance, diſappeared. From the quickſand thus becoming ſo much deeper, we could not, with the *level* of the *mill-pool*, (ſee the ſection) cut through it; nor indeed, from the wetneſs of the ſeaſon, (November 1791) would ſuch an operation have been proper; I therefore continued a ſhallow drain to II, making ſide-holes into the quickſand, (ſee the ſection at O) which ran freely; but, as this could not cure the whole of the bog below, we branched out another drain from K, marked on the plan LL. This laſt drain was made by the method deſcribed for curing the ſecond claſs of wet or boggy land, namely, by ſinking a cloſe drain through the upper ſtrata into the upper clay, and then at a ſmall diſtance on one ſide of this cloſe drain, boring a hole with an auger through the remaining part of that clay (ſee the ſection at P) into the quickſand, and at every eight yards, as this cloſe drain advanced, ſtill boring other holes in the manner before deſcribed; through many of theſe holes the water ruſhed with great rapidity. The water diſcharged by theſe drains, at the mouth at F, into the mill-pool, is 168 gallons per minute, or 3780 hogſheads in a day; which is after the rate of 1,379,700 hogſheads in one year. About ſix acres of the land, on this plan at N, was always ſound; about twelve acres of it, on the north ſide, were an abſolute pulp, and the remaining acres very unſound; the whole of this is now ſound, and will, when cultivated, be worth 16s. per acre. This land would have been drained, at much leſs expence, into the main open drain, (ACA on the plan); but then the water, which was much wanted for the mill, would have been loſt. Theſe cloſe drains, 1452 yards, coſt 100l. of which about 30l. ought to be charged extra to the mill.

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